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Ancient Monuments in Modern Italy.

ART and archæology do not often come into Royal Addresses, but such an innovation in government procedure occurs in the Speech from the Throne of the young King of Italy, delivered at the opening of the Legislature in Rome last week.

Amongst the many weighty affairs of State proposed to be discusssed during the forthcoming session of the Italian Parliament—weighty with the responsibilities of reviving enterprise, flourishing finance, and the general prosperity of the country—space is found for Roman improvements, further extensive alterations at Naples, and (what is of greater interest to the general educated public) a development of the conservative principles affecting public monuments which have become so remarkable during the last few years in Italy. The King intimates in his Speech that the whole peninsula is to be brought under the Government organisation already established for preserving works of artistic and historical interest, which at present seems to be confined to the more northern provinces. This admirable institution of recent years, although not the only body representing a national interest in the preservation of antiquities, is the responsible government authority in such matters, wherever it has been inaugurated, and it influences and controls to some extent the less important local societies. In Italy these local societies, although founded for the purpose of popularising the study and care of national history, are frequently swayed by local interests, and even, strange as it may seem, by political considerations, and occasionally their influence is anything but conservative. In the case of a country such as Italy, many parts of which are still in a comparatively barbarous state, and where a very superficial education in the richer classes of the community is just sufficient to induce a desire for what is called "restoration" or renovation of the public monuments, such an institution as the "Ufficio per la Conservazione dei Monumenti" is evidently of immense value.

Forty years ago, in the days of the "Unification" of Italy, laws for the preservation of national monuments were perhaps of greater necessity than even at present. The mutilation of statues and other monuments in public places, which expressed the political changes in a particularly brutal manner, would hardly be permitted at the present day on the score of the commonest public decency. Not merely the erasure of historic inscriptions referring to bygone institutions, but often the most disgraceful vulgarity was perpetrated, such as the conversion of a bronze colossal statue of one of the popes into a patron saint of the town, at Rimini, by the substitution of a rudely-formed episcopal mitre in place of the tiara, with a clumsy representation of a crozier in one hand, the whole transformation the work of some common blacksmith, who must have been employed by the baser part of the community thus to disfigure the town. Numerous were the instances in those days of such malpractices, committed by municipal and other authorities for the purposes of currying favour with an uneducated democracy, and eager to commemorate their terms of office by some unnecessary change in the aspect of the towns they had to do with.

At the present moment a certain class of ancient monuments is attracting a great deal of attention in Italy. The ancient town-walls have been hitherto retained in a remarkable degree of completeness, partly on account of the manifest uselessness of pulling them down, and partly—or, perhaps, chiefly—because they happened to remain in use as Octroi boundaries, long after their original intention as fortifications had disappeared. Hitherto these ancient walls have formed one of the most characteristic and picturesque features connected with the old Italian cities, and their gradual disappearance will detract materially from the old-world charm of the peninsula. In some of the cities a vigorous effort is being made for their preservation, but it can hardly be expected that mere sentimental reasons for their retention can weigh against the speculative money-making interests involved in the conversion of their sites to other purposes. Rome still retains its ancient wall, of untold associations, almost complete. Florence lost hers in 1860-1870, when the Octroi boundary was pushed much farther out into the country; Milan retains the greater portion of its sixteenth century fortifications, crowned with beautiful horse-chestnuts, and affording the pleasantest of promenades.

The citizens of Bologna and Genoa are now deciding to remove these boundaries of their past history, in spite of a determined protest in each case on the part of certain dissentients who find a great deal to say on the subject in the local daily journals. In the case of Bologna a great deal may be urged against the destruction of the wall. It is quite unnecessary on the score of enlarging the city, as there are large tracts of unoccupied ground still within it. The only excuse for its removal which can be urged by the party of destruction, is that the city will thereby be modernised. In other words, the object in view is to do away with one of the special features which render an old Italian town different from anything of the kind to be found in other countries. This must, of course, in time seriously affect that large section of the townspeople which lives on profits derived from the tourists and visitors, whose only attraction to such a place as Bologna is its old-world character. But the misdirected ambitions and the ceaseless modern craving for something new, which have affected Italian municipalities ever since 1870, are now inducing the Bolognese to this stupidity, to be regretted by every one except the contractors secure of an immediate profit out of the job, and the Town Councillors who vainly imagine that their interests and their popularity may be increased thereby. At a recent meeting of the Town Council it was decided to carry out this piece of destruction, in defiance of the efforts of the Conservative Party, headed by Signor Rubbiani. The deed may, however, be still averted through the action of the Department for Preserving National Monuments, and it is in such cases as this that fuller and more adequate powers seem to be required by the Government for dealing with the historical memorials of the country, as referred to in the King's recent Speech.

Genoa does not depend for its interest to the passing visitor so much on historical memorials as Bologna. The mediæval aspect of the city, which is so striking and complete in the case of Bologna, is absent in the great maritime city. Genoa lost

its mediæval walls ages ago, and the fortifications which are to be demolished are comparatively modern, although long out of date, as such things go. Genoa, whilst losing a great deal of its old-world imposing character, with the massive stone-sheathed earthworks of the seventeenth century, will always remain one of the most beautiful of cities, occupying one of the most striking sites in the world. Bologna, on the contrary, deprived of its mediæval character, would not attract a single visitor of the thousands who annually stay over a few nights, to explore its endless arcaded streets within the ancient brick wall which has protected them for so many centuries from the bitter "tramontana" wind sweeping over the ugly flat Lombard plain.

THE LONDON WATER BILL.

AFTER two days' debate the second reading of the London Water Bill was carried on Monday last by a majority of eighty-six. The debate was extremely unsatisfactory, and exhibited dissatisfaction in regard to the measure and a great deal of public indifference. The want of that municipal spirit which is so clearly to be seen in the great provincial towns has never been more clearly evident than in regard to this London Water Bill. The feeling among large masses of London ratepayers is that they will have to pay as much in rates in the future as to the water companies in the past, and so long as they get a reasonable supply of water they are indifferent whether it comes from a municipal or a private supply. In Birmingham or any other large provincial town there would be a sense of satisfaction that the supply of this primary article in the necessities of daily life was to be undertaken by the local community. Londoners would be quite as satisfied if Mr. Yerkes or some other enterprising American would take over the whole business and supply them with plenty of water at a cheap rate.

Mr. Buxton, in moving an amendment to the effect that the authority to be created is unsatisfactory, and unworkable, and repugnant to the general principle of municipal government, made an attack on the bill which, either from a municipal or a business point of view, was unanswerable. A body entrusted with the management of the water supply, if it is to be a separate body, should be directly elected by the ratepayers. For it has been demonstrated over and over again that it is only by means of direct representation that a proper check can be placed on financial management or that efficiency can be kept up. The ingenious and indirect election of the members of the proposed Water Trust could only be worked by an American "boss," and unless there is to be direct representation, the members of the Water Trust might just as well be a body nominated by the Government. Most people in London, however, having so little municipal spirit, will look at the Water Trust from a business point of view, and there is no man in the city of London who would not consider this huge body of over sixty members far too large. No doubt the area of the water supply is considerable, but it does not follow from that that the numbers of those who have to manage what is really a business should therefore be larger on those principles. The Board of the Canadian Pacific Railway should, on that principle, be about fifty times as numerous as that of the London and North-Western Railway. The new Water Trust will be in exactly the same position as a large joint stock company; in fact, its name of "Trust" would be perfectly understood in America if it were a private society. A private Water Trust—and such a thing would have been by no means outside the bounds of probability—to supply London and the suburbs with water, would have been managed by a Board of ten or twelve business men, under whom would have been a number of competent permanent officials. The unwieldy body which is to be created by this Bill will inevitably result in the work being done by a small proportion of active members. One speaker in the debate said that the number of representatives would enable several local committees to be formed, but there can be no need for such local committees, since the supervision and management of local areas must necessarily be under the charge of local water engineers. There is no analogy between, for example, a case of local schools or local asylums and a local reservoir with its supply pipes, and nothing was said in the debate which could for a moment justify the creation of such a Water Trust as is proposed by the Bill, except the desire to prevent the London County Council from having the control of the supply.

On the other hand, the Bill is frankly disliked by the water companies. Mr. Boulnois led the opposition on behalf of the companies. It is really unnecessary to consider his objections in detail to the measure, because the gist of his opposition was revealed in a single sentence—"The purchase," he said, "was inadvisable altogether, and the Bill was unnecessary." From that point of view it was perfectly reasonable to object to the proposed tribunal of arbitration, to the time at which the companies should be taken over by the new Trust, and to the absence of any compensation for compulsory purchase. As regards the absence of the 10 per cent. compensation for compulsory purchase, we can only say that we should be glad to see the same absence in many other Bills; for if a fair compensation is given when an undertaking is purchased by compulsion, there is really no reason whatever why the holder of stock or the owner of land should receive more than if he sold it voluntarily, and we hope that this departure from what has been called the principle of the Land's Clauses Act will become a precedent in future statutes.

The real advance made by the Bill, as was pointed out by Mr. Asquith in his admirable speech on Tuesday, is the recognition by a Conservative Government of the principle of public control of the water-supply of London. Beyond this, the Bill is weak in its conception. It has now to pass through the ordeal of an investigation by a Joint Committee of the Lords and Commons, a tribunal which, as Mr. Long pointed out, would save the expenses of a double investigation. We fear that the cumbersome governing body can scarcely be radically altered by the Committee; but we hope, with Mr. Asquith, that it will make it clear that the stockholders in the water companies will, in the first place, have a cash valuation, and not a mere transfer of water stock, though that may, after such valuation, be given to them in place of cash. For, as Mr. Asquith pointed out, the credit of the new authority will be high, and their stock will be of proportionately higher cash value in the market. In truth the really important discussion of the Bill has yet to take place, and it will be interesting to note its fate before the Joint Committee.

THE LATE MR. BENTLEY.

IT was by a sad coincidence that the news of the unexpected death of Mr. J. F. Bentley was made public on the morning of the day when it was to have been announced at the Institute of Architects meeting that the Gold Medal had been awarded him this year—as indeed it could not well have been otherwise awarded. This is the third tragic fatality in the architectural profession during a very recent period.

By his death we lose a man who to the comparatively few who were acquainted with his work had long been known as a true artist, though it is only his great building at Westminster which has brought him something like public fame. Mr. Bentley was in fact so retiring and reserved a man that it was difficult for any but a few friends to know much about him; but he was an example of an architect (there are not too many of them) whose thoughts and endeavours were given rather to the perfecting of his work than to either emoluments or public notice. It has been related to us that when in his earlier days he had been selected as architect for a proposed church, the committee, after waiting some time, wrote to him to ask when the design would be ready, but received the reply that he had not yet satisfied himself with it. After waiting some time longer a second appeal was made, coupled with an intimation that if he kept them longer they might feel it necessary to go to another architect. Bentley's reply was that he could not send in a design until he was entirely satisfied that it was the best he could do; but added that if they wished to go to another architect he was quite content that they should do so. This we may take to be typical of the spirit in which he worked. When a friend congratulated him on the fact that the Institute had decided to offer him their Gold Medal, he replied—"Such things are not in my line; I do not appreciate these honours in the least; but (he added very emphatically) I do appreciate the good will of my brother architects in presenting it to me."

The following extract from a letter sent to us by a younger architect, is interesting as throwing light on Mr. Bentley's real character, which no doubt was often misunderstood owing to his reserve and a certain brusquerie of manner:—

"My first introduction to him was nearly five years ago on a little matter of private business, when, in reply to a letter of mine asking for some concession, I received a reply in such curt and uncompromising terms as—much as I wished to meet him—made me hesitate long before screwing up courage to do so. Upon meeting him, he received me very much in the spirit indicated by his letter. Any attempt at discussion was futile, and we eventually arranged our business on his own terms. Much to my surprise, however, no sooner was this accomplished than he voluntarily made nearly the whole concession I had asked for, and before our interview was at

an end (it did not last more than ten or fifteen minutes) I had quite thrown over my previous impressions of his character, for from being absolutely impassive and reserved he seemed to change to a friend of years' standing, giving me the most kindly advice and good wishes as well as encouragement as to the future. This was the side of his character I saw to nearly the day of his death, my last meeting with him being less than a week previous to that sad event. I met him frequently, and never without some kind inquiry on his part, and when it was my good fortune to be able to tell him of some little success, his expression of pleasure and congratulation were most tender, and such as one might expect from a father to his son.

During the last year or two he found such difficulty in speaking that I would sometimes attempt to pass him to save him the pain of a conversation, but seldom would he allow this."

We have given in another column a list of Mr. Bentley's principal buildings. Many even of his architectural friends were possibly not aware that he was also a most gifted and original designer in silver work and church plate, a side of his work which was beautifully illustrated in the design for the presentation casket to Sir Stuart Knill, illustrated in the *Builder* of May 11, 1895. His great cathedral building, if completed according to his intention, will remain his principal monument, and is a building remarkable both for its general grouping and for the finish and originality of its details. As one or two of our readers have expressed surprise at our apparently neglecting till recently this remarkable building in our illustration pages, we may take the opportunity of saying that this was due to no indifference on our part, but to deference to the wishes of the architect. Three years ago we endeavoured to move him to supply us with materials for a perspective view of the exterior as it would ultimately appear, but he expressed his wish that any illustration of the exterior should be deferred until one could also be given of the interior, so that the two might be judged together; a wish which, of course, we could only respect. During the last few months he relaxed this embargo so far as to accede to the illustration of portions of the exterior, one of which was given in our New Year's number, and another will appear in our next issue.

Mr. Bentley was a devout Catholic, and it was among his co-religionists that his chief practice lay. He was interred on Wednesday at St. Mary's, Clapham, with a solemn Requiem service, when Cardinal Vaughan gave an address on his life, his work, and his sterling qualities, referred to his lack of ambition for worldly fame, and characterised him as a thorough artist, whose first principle was to serve and be loyal to his art, and as a good Christian.

NOTES.

Chelsea Baths Competition.

THERE appears to have been something very unsatisfactory, and perhaps deserving a stronger term, about the conduct of the competition for new baths for the Chelsea Vestry. The Vestry made a mistake in the first instance in selecting Mr. Norman Shaw to act as assessor, since it is not at all probable that he has any special acquaintance with the requirements of public baths, or would be likely to give his attention to anything except the architectural appearance of the designs; which, though certainly not unimportant, should hardly be the first consideration in a building of that kind. Having chosen their assessor, however, they were bound at least to have awarded the premiums according to his recommendation, even if they did not select one of these designs to be carried out. They have, however, thrown over all Mr. Shaw's awards, and given the premiums as they pleased; thus at once breaking faith with the competing architects and throwing a slight on the distinguished architect whom they had selected as assessor. We may further ask why, since the drawings were publicly exhibited, we received no notice of the fact, as we usually do in such a case, from the secretary or clerk to the Committee? To a request for an explanation of this omission we have received no reply, and naturally draw our own conclusions.

The Widening of London Bridge.

WE understand that the Court of Common Council have adopted a report made by their Bridge House Estates Committee recommending the acceptance of a tender by Messrs. Pethick Bros., of Plymouth, for 95,489*l.* That amount will be defrayed out of the funds belonging to the Bridge House Estates. Mr. Andrew Murray, City Surveyor, is the architect for the works, which, it is stated, will be executed in Devonshire granite. A statement prepared by Sir John Rennie, who, with his brother George, completed the present structure after the death, in 1821, of their father, John Rennie, sets forth that it was built of the finest blue and white granite, containing large white felspar crystals, obtained from Devonshire and Scotland, and that the whole sum paid to the contractors, Jolliffe & Banks, was 425,081*l.* 9s. 2d., the total expenditure, including approaches, having been 1,458,311*l.* 8s. 11¾d. (The noting of the farthings in this large sum is curious.) We fear we must now conclude that what we do not hesitate to call the disfigurement of London Bridge, to meet a necessity much more imaginary than real, is definitely decided on, in spite of the fact, shown by statistics, that the traffic over the bridge is actually less than it was a few years ago. It is a foolish piece of business to interfere with and spoil one of the most remarkable bridges in the world, without any proved necessity, and against the opinion even of the eminent engineer who was called in to advise upon it.

Some Electrical Developments.

LORD RAYLEIGH gave his third lecture on "Some Electrical Developments" at the Royal Institution on Saturday afternoon. He first of all explained in what direction a spherical ball of iron moves when placed in a magnetic field, and gave, by means of a powerful electro-magnet, a demonstration that it always moves to the place where it will be magnetised most strongly. He then showed a very simple form of synchronous motor which he had constructed long before electricians had developed the modern alternating current motor. It consisted of an iron disc which was rotated between the poles of an electro-magnet excited by a current made intermittent by a mercury cup tuning fork interrupter. When the tuning fork was viewed through holes cut in the disc it appeared absolutely stationary, thus showing that the motion was synchronous. We were interested to learn that this stroboscopic method of studying the instantaneous positions of a moving body, which we thought had been developed during the last few years, had been used by the lecturer many years ago. The behaviour of iron under small magnetising forces was next described, and a beautifully simple demonstration of it was given by the Rayleigh method. A small steel magnet was acted on by two coils, one containing an iron core, which were connected in series, and it was proved that magnetisation was proportional to the magnetising force so long as that force was not greater than one-fifth of the earth's horizontal magnetic force. It seems to us that this result is of great importance in several of the problems of wireless telegraphy. Lord Rayleigh mentioned that he had found that unannealed iron wire always acted in a perfectly definite manner when subjected to magnetic force, but that annealed iron behaved erratically, the amount of magnetism induced depending on the time the force was applied. This has an important application to telephony. He mentioned that Tait and Preece had much exaggerated the sensitivity of the telephone He had found that the minimum audible current was ten thousand times greater than that stated by them. The error in their measurements was due to neglecting the capacity of the resistances used. He exposed the fallacy that a magnetised ring was a store of energy. A striking demonstration was given of the power of an electric brush discharge to dissipate smoke and dust. A large glass vessel was filled with phosphorus smoke and a wire connected to a terminal of a Wimshurst's machine was placed inside it. A few turns of the handle were sufficient to clear the vessel of smoke, for the various particles of smoke becoming electrified, attract one another and form groups which fall under gravity.

Electric Shocks.

PAPERS on "electric shocks" were read at the Institution of Electrical Engineers last week by General Webber, Mr. Aspinall, and Mr. Trotter, the Electrical Advisor to the Board of Trade. General Webber first discussed the scientific aspect of the question, he then went on to describe the events which led to the inclusion of electrical generating stations in factory legislation, and concluded by quoting in full and criticising the regulations proposed five years ago by the Home Office Committee on Dangerous Trades. Mr. Aspinall's paper, although it was rather gruesome, was a valuable contribution to our knowledge. He gave reasons for supposing that persons suffering from certain diseases were more susceptible to shock than others. He pointed out the importance of the path the current takes, and stated that although he had been present in three cases where a doctor was called in to attend a man who had received a severe shock, yet he had never been asked where the current entered and left the body. We are in entire agreement with Mr. Aspinall's conclusions that when the electric pressure is below 600 volts the conditions must be abnormally favourable to shock in order to cause death. Mr. Trotter described a series of experiments he had undertaken to find the maximum possible shock that could be received without unpleasant after effects. In our opinion he minimised too much the danger from shock. It is the untoward

cases we have to guard against. For example, we know a healthy young electrician who has received many shocks of 500 volts and upwards in the test-room in his every-day work and merely laughed at them, yet, inadvertently putting his hand on a Ferranti meter, in the cellar of a private house supplied with current by a London Vestry, he received a shock which seriously hurt him. We think that the public ought to be protected by the Board of Trade from severe shocks, even although many people can stand these shocks with impunity.

Old Remains at St. James's Palace.

IN the course of some excavations that are being made in the cellarage on the west side of the Colour-court have been found a considerable quantity of human bones and a leaden coffin with its contents—the coffin being in the old and not unfamiliar shape, somewhat on the lines of the human form. The discovery may be accounted for when we recall that the palace occupies the site of a lazar hospital for lepers (women), founded and dedicated to St. James by the citizens of London in the eleventh century, and to which Edward I. granted, in 1290, the privilege of a yearly seven days' fair. Berking, the reforming Abbot of Westminster, 1222-1245, had rebuilt the hospital. In 1450 Henry VI. bestowed its perpetual custody upon Eton College. In 1532 Henry VIII., on marrying Anne Boleyn, exchanged Chattisham, and other lands in Suffolk, for the hospital. He pensioned the sisterhood, dismissed the lay-brethren, and, as Holinshed records—

"Purchased all the meadows about St. James's, and there made a fair mansion and a park for his greater commodity and pleasure."

Henry VIII. also annexed the present St. James's Park, which he encompassed with a brick wall. Thomas Cromwell, Earl of Essex, superintended the building of the new "manor-house," as it was then called, and Holbein, reputedly, made the plans and designs. Of the former palace, occupied by Henry VIII. until he obtained Whitehall from Wolsey, there remain the gate-house, through which one enters the Colour-court; the chapel, in which Sir Christopher Wren, on February 29, 1676, married his second wife, Jane, daughter of William, second Baron Fitzwilliam, and in one of the state rooms a stone Tudor arch over the fireplace sculptured with the initial letters "H. A." united with a lover's knot surmounted with a royal crown, and with the rose of Lancaster, the lily of France, and the portcullis of Westminster. Timbs mentions that in 1838 were dug up from beneath the chapel various fragments of masonry of the former hospital. The survey of the palace and Capuchin convent, made in 1689 for the rare pamphlet cited in our "Note" of August 10 last, plots "a burying place" in the ground where is now the open space of Friary-court, and the "cloisters" abutting against the east end of Queen Henrietta Maria's Roman Catholic chapel; that later burying place, however, should not be confused with the site we speak of above, which lies some yards to the west of Friary-court, and in a separate part of the palace.

Launceston Castle.

THE Town Council of Launceston have agreed to take a thirty years' lease of the castle grounds from the Duchy of Cornwall, at an annual rent of 5/., and to preserve and maintain the ruins, with the pleasure-grounds around. The walks and gardens were laid out in the old precincts after the removal of the Assizes to Bodmin in 1838, and the consequent dismantling of the modern gaol, the hall, chambers, and chapel. The castle, which is cited in the Domesday Survey, was built upon a steep and lofty eminence washed by the Kinsey, a tributary of the Tamar. The main entrance, across the moat, was on the west side, but in 1834 a new approach was made. The main wall extends from the east gate to the Witches' Tower, which fell down at the construction of the new road. The keep stands upon a partly artificial mound, and is gained by a flight of steps. It consists of a round tower, some 32 ft. high, built of hard blue stone, and containing two staircases. King John bestowed upon Hubert de Burgh the wardship of the castle, which afterwards was granted to the Dukes of Northumberland, together with the office of Constable of Launceston. During the Civil War the castle was held in various turns by both parties, and in the end Colonel Basset surrendered it to Fairfax in March, 1646. During the Commonwealth, the Parliament sold the castle (wherein George Fox was imprisoned in 1656) and its precincts to Robert Bennet, but they reverted to the Crown at the Restoration.

Pictures of the Holy Land.

AT the Fine Art Society's Gallery there is on view a very interesting collection of pictures and studies of landscape and architecture in the Holy Land, from Hebron to the Lake of Galilee, by Mr. John Fulleylove. They are perhaps as interesting in a topographical as in an artistic sense—the view evidently taken by the majority of visitors, who care more about sacred associations than art; they do not present many opportunities for the class of subject in which Mr. Fulleylove has made his special success. Some of those which are mainly landscape subjects are however very charming; "The South Wall of Jerusalem from Siloam" for instance (65), a very bright and clear early morning effect, and the view of the arid and dreary landscape of the Judæan desert (72). Among those in which architecture takes a prominent place one of the best is the large view of "The Pool of Hezekiah" (32). The exterior view of the Mosque of Omar (16) gives a very vivid and complete idea of the colour and aspect of the building; and there are a good many others which will be of considerable interest to architects. No apology was required for the pencil sketches; from an architectural point of view they are among the best things there, as may be recognised on comparing the water-colour drawing of the "Entrance to the Church of the Holy Sepulchre" (74) with the pencil drawing of the same subject (43). The latter will certainly be preferred by architects, though not perhaps by others.

Pastels of Mr. A. Hitchens

MESSRS. WALKER'S small and not very well-lighted gallery at No. 181, New Bond-street, contains a collection of Pastels by Mr. Alfred Hitchens which are worth a visit. The majority are small landscapes, most of them very good examples of the kind of effect which pastel can best deal with. Among those which are especially successful are "The Eve Before the Mowing" (9) and "A Lonely Heath, Burnham" (22), the latter an ideal pastel subject. Mr. Hitchens also exhibits some very good portraits and studies of heads in pastel.

DESIGN IN FURNITURE.*

IF we may judge from the least developed races now inhabiting the globe, furniture in its widest sense may almost be said to be of more primitive necessity to man than building. The tribes of Central Australia may be taken as an example of this, among whom we find quite a diversity of utensils and implements, some of which have rude attempts at ornament, while their only endeavour towards building (if one may so call it) seems to be a rough hut of boughs of trees.

To clear the ground it will be well to start with definitions:—

1. What do we mean by design? and
2. What is it we include under the term furniture?

1. By design, I take it, we mean that quality which marks any object to which it is applied as having received thought in its conception; and, further, as having suitability for the function for which it was intended. From the just combination of thought and suitability arises true beauty.

2. The word "furniture" embraces all those articles which we need in our daily domestic life for use, comfort, or joy.

During the most ancient historic times we have evidence that furniture, upon which much thought and care had been expended, was in use; and many remains of it have come down to our day. As the stream of time flowed on, and man's needs and luxuries increased, the variety of the pieces of furniture he required in life increased in equal proportion, until to-day their number is immense.

The field has become so vast, indeed, that we talk now of church furniture, garden furniture, and so on, each branch demanding the accurate knowledge of a specialist. It is domestic furniture that I have primarily in my mind to-night, for (if I may say so) it is domestic furniture that most needs the quality of design applied to it in our present day. I do not for one moment overlook the great awakening that is taking place; but the mass to be leavened is very great, and I am not quite sure that the designers are following the ideal road. At any rate, there are two dangers, at least, which beset the path of the twentieth century designer: first, eccentricity and second antiquarianism. In striving to avoid the deadly monotony of the average furniture and arrive at something more original, it is so easy to fall into the first fault—eccentricity.

As a recoil the beauty of much old furniture is apt to reduce us into mere reproduction of the work of other days. We study the past to live the present; may I, therefore, very briefly run over a few points of the history of furniture, which, perhaps, will help us to consider what should be our attitude to-day as regards the matter.

The remains we have of the furniture of very ancient times are too few (and often fragmentary) to allow us to generalise from them; not to mention that the state of society then was widely divergent from modern days, so that we cannot learn many lessons from the productions of those times. Of the period of the Renaissance in Italy, we have remaining wonderful dower chests and jewel caskets of carved wood, gilded and decorated in colour, mottos and armorial bearings being introduced, and sometimes the panels are formed by painted scenes.

We also still see in the old Italian palaces rows of stately chairs ornamented with carving and inlay, and tables whose tops are formed of a slab of more or less precious marble; and doubtless many of these are ancient, or their design is based on a traditional treatment. These accord well with the formal solemnity of the State apartments they furnish, and have much fine work in them, although the general effect is somewhat too ornate. Although not strictly, perhaps, belonging to our subject to-night, I would mention, in passing, that some of the fabrics used for covering the

* A paper by Mr. Vivian H. King, read before the Discussion Section of the Architectural Association on the 28th ult.

cushions of these chairs are worthy of careful inspection. I remember in the Palazzi Massimi in Rome seeing some chairs, the covering of which was white leather, having an appliqué of velvet and gold thread, the finer portions of the pattern being filled in by point embroidery in coloured silks.

When the Renaissance began to touch us in England, at the latter end of the Tudor period, our intercourse with Holland was considerable, and we find this reflected in the furniture of that time, for, though founded on classic forms, these are often bizarre, the later designs becoming more florid. The number of pieces required at this date were not many—chairs, standing cupboards, and large tables with massive legs almost exhausting the list. Under the early Stuarts the lines are perhaps more severe, and the carving (which was much used and very characteristic) was of low relief. Often almost the entire surface was thus covered, a very usual arrangement being a series of panels, formed with semi-circular arched heads supported on pilasters, which latter formed the divisions between one panel and the next. The ground of the panel thus obtained was carved, sometimes with figures but more usually with conventional foliage, the background being worked all over in some manner —small drilled holes or the like. Such panels formed the backs of chairs, the doors of cupboards, the footboards and heads of four-post bedsteads, &c. The distinctive nature of the carving, and the ease with which it can be imitated, has lead to many modern copyists trying to produce so-called Jacobean furniture.

Towards the end of the seventeenth century and in the early days of the eighteenth we first find productions which seem in touch with modern ideas of comfort. The use of more varied woods came into vogue, and inlay as a method of decoration was carried to great perfection. (As a note by the way, the wonderful intarsiatura seen in Italy will occur to all of you) The bowed legs and claw or ball feet to chairs and tables mark this time, also a greater attention to the ease of persons using the chairs, shown by the inclination of back, spreading of arms, and the arrangement of the cushioning.

We now arrive at the days of Thomas Chippendale, who flourished under George III., being appointed Court cabinet-maker to that monarch. (His workshops, by the way, being located in St. Martin's-lane.) Chippendale was a good man of business, and reflected much of the prevailing taste of the day in his productions. His early work was influenced by contemporary French furniture, while in later life he made attempts at providing for the Chinese partialities of the public, which had been awakened by Sir William Chambers's dissertation on the art of the Celestial Empire.

In his early work Chippendale never went to the lengths which we find in furniture of the reigns of the XIV. and XV. Louis. Le Roi Soleil demanded that sumptuous treatment of all furniture and fittings which should accord with the idea of his over-decorated interiors, and the artificers he employed rose to his requirements. Every species of enrichment was employed: metal mounts, gilding, and inlay and veneer of all descriptions, ivory, tortoiseshell, metal, and wood. The style known by the name of Louis XV. is perhaps still less to be admired, for, added to the errors of the previous period, we lose what lines of constructive propriety there were, and in their place have wildly-flowing curves, panels of of eccentric shape which give the eye no rest or satisfaction. Workmanship was carried to the greatest perfection; we wonder at it to-day, but cannot but lament that so much skill, time, and money was not applied in producing results dictated by a simpler and purer taste. In the lavishness of decoration and the complexity of design the fineness of material is lost, and lines of beauty are unseen. If one has any doubt on this head a visit to Hertford House and a study of the wonderful collection of furniture there cannot fail to speedily convince one of the error of over-elaboration.

This over-luxuriance appears to have been felt even in France, for furniture produced in the later years of Louis XV. and the early ones of Louis XVI. shows greater restraint, gradually preparing the way for the neo-Greek of the Empire.

To return to Chippendale, he reflected, as I have said, the prevailing taste, but exercised a certain amount of discretion in the forms he adopted. His workmanship was good, and a considerable quantity remains, though of course it is scarcely necessary to remark that the vast majority of pieces to which his name is applied never came from his workshop.

The next name we come to is that of Heppelwhite. The productions of this artist are marked by simplicity and good proportion, the lines more severe and the decoration refined, and I cannot help thinking his work some of the most charming of English furniture. A few years later we find Thomas Sheraton following somewhat the same lines, but with perhaps greater freedom. Both of these men pay much attention to the profile of their mouldings, the purity of which seems to image the reviving interest in Greek art.

The style in vogue in France under the Empire influenced English furniture of the early years of last century not a little, but during the later Georgian period and Early Victorian, the deterioration was steady until (I suppose about 1850) the very lowest depth was reached, when neither grace of form, beauty of decoration, nor excellence of workmanship, had any part in the pieces which were turned out. In fact, the name Early Victorian has become a synonym for the inartistic. There seems to have been a feeling that weight and bulk in themselves added to the desirability of furniture, and many of the productions can only be described as "lumpish." It seems in this time also that people became enamoured of overcrowding their rooms with belongings. I know rooms of which I have been told the former contents, and I can scarcely imagine when all the furniture was in of which I am informed, that it would have been possible to anyone to have entered the door, much less lived in the apartment. One characteristic in furniture design of the first half of the nineteenth century I find it hard to account for, and that is, the horror there was of a straight line. Everything was curved and cushiony, and what curves they were! Can it be a faint reminiscence or recrudescence of the horrors of the Louis XV. period? Owing to the great increase of population, there was a large demand for furniture, especially by people of the rising middle class; and this led to the production of cheap pieces, in which the horror of bad workmanship was added to the other evils.

Thank goodness! we can speak of this in the past tense. For we can truthfully say so much; that whatever our present sins of omission or commission may be, we are at least earnestly striving towards the best things to which our light can lead us.

There are some points which strike one in running over briefly the course of furniture design in England:—

1. Each age had a distinctive form of expression. As in the building of houses, so in the fitting and furnishing of them, the designer tried to express the time. There was formerly no such thing as an "Old English dining-room," "Louis XVI. drawing-room," or a "quaint bedroom," as fitted up by a modern firm of great repute, all under an early Victorian roof. No! the house and its contents were in harmony, and both expressed (or tried to express) the actual time and owner. The walls of a room were not decorated with utter disregard of what its use and contents were to be. There was an agreement between the building and the furniture which we often look for now in vain.

2. There rarely appears to have been a desire to ape the fashions of a previous period. Furniture design seems to have been a living art up to the early years of the nineteenth century.

3. Suitability does not seem by any means to have been always the guide. For example, chairs are arranged often with little regard to human beings having to sit in them. The backs so straight, and possibly covered with most uncomfortable knobs of carving, the arms too high, the seats arranged at such a level that you knock your knees when attempting to sit at a table.

4. Workmanship was usually good, a point of the utmost value, for who would spend much time or thought on the design of an ephemeral production? There was great Catholicity in the choice of material. Some were tried doubtless only to be condemned either from lack of comfort or durability, but the designer had an open mind, and used what seemed to promise well. Varied material introduces the element of colour in a natural and durable way, and good colour is as much to be admired as good form. Applied colour has dropped largely into disuse, which I humbly think is a point much to be deplored. It must, however, be admitted that our climate would be trying to applied colour, and that for an article which is much handled, it would prove unserviceable; still, there are cases where, protected from the weather and not liable to be much touched, it could be used. We are, as a nation, afraid of colour, and the instinct for it seems to have been almost dead a few years since from mere inanition. Yet surely under our grey skies we need colour more than most people; not, perhaps, the gorgeously vivid colour of the sunny south, where much is blended into harmony by the brilliant light, but still colour rich and strong; not the pallid and faded hues of the miscalled æsthetic cult. We need colour, but we need first education and training in its use and appreciation.

From the points I have lightly touched on I think we may gather some canons which should guide us for the future.

1. First and above all *the design should be as expressive as possible, expressive of the owner, the place for which it is intended, and its function.*

The chair, or other piece, to be used by a Royal person on a State occasion, should be widely divergent from a similar article for, say, the use of a member of the Architectural Association, though each may be, and ought to be, equally beautiful. Again, as to place, what might be most eloquent in furniture to be used in a city, would appear out of place in a country cottage. Similarly, what is to be admired in one's home may have to be depreciated in one's office.

And then to be expressive of its function! Who cannot recall chairs which are so expressive as to remind one of the very hours of the day? One so eminently having a nine o'clock-on-Monday-morning-air, while others are as decidedly 8.30-or-9-p.m. on a day towards the end of the week!

2. The second guiding principle I would submit must be *suitability in form, material, and decoration.*

The function of the piece is first to be considered, and *that form* which is found by experience or thought to enable it best to fulfil its function, is the form to be commended, and this form will be found to be that of constructive propriety. There is current, (not, of course, among members of the Architectural Association, but among the laiety), what seems to me a mistaken idea, namely, that a design based on frankly utilitarian lines cannot be beautiful, but to become so must have some so-called ornament applied to it. Ornament (and that too must be expressive) can only satisfactorily clothe the form based on suitability. No amount of ornament can redeem from failure the form obviously inappropriate.

To be suitable in material is so obvious that I need scarcely enlarge on it, but only mention the various qualities of materials which must conform to the law of suitability—weight, hardness or the reverse, coldness or otherwise to the touch, durability, and finally value.

This leads us to the third consideration regarding the suitability of design. All decoration must be subservient to the piece's main function. Knobs of carving in chair backs or arms must therefore be anathema; carving of a delicate nature on a much-used article, or costly inlay on furniture intended for a poor man, are equally to be condemned.

Perhaps I cannot better explain my meaning of expressiveness and suitability than by mentioning what seems to me perhaps the most triumphant example of the converse which I have ever seen. I was so unfortunate as to see what I am about to mention a short time back in a shop window. This curiosity, I have reason to think, was intended for sitting in. What met the eye was a huge shell of wickerwork lined with pale pink plush!

No persons anywhere are, as far as I am aware, in the habit of sitting in shells, so it was not expressive of person, place, or function. I cannot believe a shell to be a comfortable or convenient form of seat; hence it is equally unsuccessful when tested by the canon of suitability of form, while I am quite sure that pale pink plush is anything rather than durable.

3. The principle placed last, but not of lesser importance, is *good honest workmanship.* The finest design suffers by inferior production, the worst assumes an appearance superior

to its merits by being carefully and well made. How much depends in the total result on the choice of the material for the various parts! How much in their accurate fitting together, so that they work easily in their intended ways, such as doors shutting closely but without strain, and drawers running well! It may be urged with truth that labour is expensive, and that for those of us whose purse is shallow exquisitely-made furniture is beyond our reach. To this I would reply, rather simplify the design than accept inferior work. The ill-made piece is a continual distress, not to say aggravation, while the honest and well-made one is a constant delight, however plain and simple it may be.

Thus, then, it seems to me what we should aim at in our furniture of to-day and to-morrow is a design expressive of our day, our personality, and our needs, carried out by sound workmanship in a manner suitable as to form, material, and decoration. This may seem a counsel of perfection, but it is surely always well to have an elevated goal before us, even if our efforts only distantly approximate to our desired end.

There is one more point I would touch on, which is the value of simplicity; better, far better, the unadorned line of constructive grace, than any approach to illogical or florid ornament, which destroys all sense of satisfaction. I would carry this further and plead for simplicity not only in the individual pieces, but in the multiplicity of them. Our rooms are overfull; as we fail to see the beautiful lines of some piece if too overlaid with ornament, so we miss a lovely design if crowded round with a multitude of other objects. And to those who cannot have much, the pleasure and satisfaction derived from a few things of artistic worth must infinitely outweigh that obtained from a plethora of inferior belongings.

And, finally, before I sit down, I would ask, What is our position as architects towards the question of furniture?

There was a time when an architect's work was supposed to end with four walls and a roof; slowly this idea has vanished (or is vanishing), and I rejoice to know that often now the client seeks the advice of his architect as to internal decoration and fittings. I think we may say that it is now clearly recognised that he who designs the house should arrange the setting, namely, the garden. If this is so why should he not equally act as advisor (if not actual designer) of internal furnishing? How often does it not happen that some feature which would produce the effect we built for, is hidden or distorted by the incongruous articles placed before or around it? I do most sincerely believe that many or most of the failures we see in furnishing are due to ignorance, and with the growing art life of our nation this (we hope) will vanish; but granted this is removed, even then no one, it seems to me, can have a better right to speak as to the furnishing of a room or house than he in whose mind the scheme of it has originated and taken shape. I fear I have spoken here in an unduly dogmatic manner, but I feel strongly that in this matter architects may have a great influence in the present and near future in re-awakening a real appreciation and love for things beautiful, and this must be my excuse. Our constant and intimate surroundings, not only in our homes, but even in our offices, exert an enormous, yet often unconscious, influence upon us; that this influence should be towards the right side is of vast importance. To help all we can this growing influence in the right paths is, it seems to me, our contribution as architects towards the question of furniture.

THE SITE OF CHRIST'S HOSPITAL.—The proceedings in arbitration as between the Governors of Christ's Hospital and the Governors of St. Bartholomew's Hospital have been brought to a conclusion. After the hearing of the case at the Surveyors' Institution, Lord Balfour of Burleigh, who acted alone as arbitrator, has just announced his award, which is to the effect that the Governors of Christ's Hospital should be paid a sum of 238,781*l.* as compensation in respect of an area of 67,680 ft. superficial which the Governors of St. Bartholomew's Hospital seek to acquire out of the site in Newgate-street. Taking the site as being, say, five acres in all, it will be seen that the sum awarded is for about three-tenths of the whole area, which the Governors of the school desired, in the first instance, to dispose of in its entirety and under one sale. The Blue Coat boys will assemble on April 19 for the last time in the old buildings.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL meeting of the Royal Institute of British Architects was held on Monday evening at No. 9, Conduit-street, Regent-street, Mr. William Emerson, President, in the chair.

The Late Mr. Bentley and the Royal Gold Medal.

The Chairman said the meeting was a special meeting in order to put to the meeting the name of the Gold Medallist nominated by the Council for this year. He had, however, to announce one of the saddest things which had occurred in the annals of their history. Some time ago their Council nominated for the Gold Medal Mr. John Francis Bentley, the architect of the Roman Catholic Cathedral, Westminster. On Saturday last that gentleman was seized with a paralytic stroke and died on the following day. Had it not been for this great calamity he would have been elected the Gold Medallist for this year. Under the circumstances the Council were placed in a peculiar position. This was the King's gold medal, and they could not say what his Majesty's views would be with reference to awarding a medal to a gentleman who had passed away. The Council had, consequently, decided to let the matter stand over, to ascertain what might be the King's pleasure. They all deplored Mr. Bentley's loss to the profession, just as much as if he had been a member of their Institute. He thought it would be quite fitting that the Institute should send a letter of condolence to the widow. They all knew some of Mr. Bentley's works, and it scarcely seemed necessary to go through a list of them. At the time of his death he was engaged on the cathedral at Westminster, which many of them had been to see, thanks to the kind permission of the architect. Mr. Bentley also built St. Mary's, Cadogan-square, Chelsea, a large Gothic church; a fourteenth century church at Watford (the Holy Rood); he restored St. Botolph's church, Bishopsgate, for the rector, known as "Hang Theology Rogers"; he also did the internal decorations at St. Mark's, North Audley-street; he was the architect of the Priest's Seminary, Hammersmith (which many of them knew as a nice, carefully-designed building); the church of Corpus Christi, Brixton, and a church at Penshurst. His work was well-known to them, and there was no architect of greater refinement or truer appreciation of detail in church architecture.

The Chairman then moved that a letter of condolence be sent to the widow, which was unanimously agreed to.

The special meeting then terminated, and the ordinary meeting then commenced.

Mr. Alex. Graham, hon. secretary, announced the decease of the following Associates, Mr. W. Chastel de Boinville, Mr. G. Cuthbert, and Mr. Thomas Gordon, all of whom were elected in 1882.

Mr. Graham announced the receipt of a number of donations to the library, and on his motion a vote of thanks was accorded to the donors.

Mr. C. H. Gage was then elected as an Associate.

Photographic Records.

Sir Benjamin Stone, M.P., Chairman of the National Photographic Record Society, was then called on by the Chairman to say a few words in reference to a collection of about 100 photographs of architectural work, forming part of the collection of the National Photographic Record Society, which was on view prior to being deposited in the British Museum. Sir Benjamin said it had been suggested by mutual friends of both societies that some of the photographs should be shown in that room before they were sent to the British Museum. It would be admitted that they, as architects, were associated with so many beautiful and historical objects in connexion with their work that they must know and feel that any encouragement in the direction of the preservation of records of those objects was commendable. It was a common idea that because most people had kodaks and cameras there was a great deal of good and useful work being done which would prove most valuable in future time. There was no greater mistake than that. Most people who took the trouble to do good work did not keep a register or list of it, and later on, when death removed them, no one knew what they had collected. That was often the case; but then there were the "wasteful photographers," who were on every hand, who photographed things they knew not why, and what they did was often a waste of time and money. Out of the mass of those who photographed things it seemed possible to make sensible people take some interest in historical records, and his work had rather been with the intention of setting an example—not that he presumed to do anything on a large scale, but in order to help get the work done. With his friends, Mr. Scamell and Mr. Alex. Graham, they had succeeded in impressing the public in different parts of the country as to the importance of the work. A number of collections had been made of great interest and value; in all, in about twenty places in the country, good collections had been formed, and these would be preserved in the county towns. That was the kind of work which ought to be done everywhere, for things were so transient, and people, when objects or customs of interest had passed away, gave large sums of money for reliable records of past times. Our own history was built up of things which were absolutely lost to us, and we knew how valuable even an ordinary drawing or sketch was of the past; it was prized for what it showed, say, of the habits of the people, the character of the buildings, the customs of the times, &c. They would appreciate the possibilities of making such collections, for he knew he was talking to kindred spirits, and if they helped in forming such collections they would be doing good work, not only for themselves but for those who came later on.

Mr. Alex. Graham, Hon. Treasurer of the National Photographic Record Association, said he had great pleasure in proposing a vote of thanks to Sir Benjamin Stone for coming among them that evening. He did not stand before them as a treasurer appealing for money, for the requirements of the Society were very few, and they got on with very little, but as an enthusiast of the Society and an admirer of Sir Benjamin Stone's work—work for a very good object. Any one who looked round that room and saw the photographs would realise that this Association was working on right lines. The photographs they saw that evening were architectural records, but photographic records were made of all sorts of things, which were sent to the British Museum—records of old customs in different villages, processions, &c., which the average public knew very little about, and which in the course of time would become obsolete. As these photographs became records, and showed the life of the people in our time, the public generally were really much indebted to the Society for the work it was doing. Their Hon. Secretary was Mr. Scamell, and he hoped that gentleman would be present at the meeting of the Architectural Association the following Friday to explain the objects of the Society and the methods adopted to make the records permanently valuable, in view of so many of the younger members of the profession being photographers

The Chairman said he had much pleasure in seconding the vote of thanks, which he was sure would be carried with acclamation.

Mr. E. W. Hudson, in supporting the vote of thanks, said he should like to know how long the photographs in that room would be on view. They all represented objects in Great Britain, but Sir Benjamin Stone was known to have taken valuable photographs in other parts. If he was not mistaken, Sir Benjamin had taken many views in Malta which were of great interest. He (the speaker) was in the Library of the Order of St. John, at Clerkenwell, recently, and he there saw some photographs showing Phœnecian ruins in the island which were archæologically most important and likely to throw light upon "Druidical" remains in Britain and elsewhere. He would much like to come across a full description of them. He hoped the authorities at Malta were watchful of such antiquities.

Mr. W. J. Locke said that the photographs would be on view until Saturday morning.

Sir Benjamin Stone said Mr. Hudson's remarks opened up a train of thought which might very well lead to a long address. Incidentally, he might mention he had taken photographs in most parts of the world. The particular photographs Mr. Hudson had referred to must have considerable interest to members of the Institute. Some twenty-four years ago there was unearthed at Malta

that great temple which was known as the Malta Temple, and which was of extraordinary interest. It was found undisturbed, and the figures of the "gods" were all in position. The matter attracted him so much that he went to Malta and photographed the temple, and he also photographed our Stonehenge to the same scale to see the resemblance between the two. Without being dogmatic, and without saying what Stonehenge meant, he was pretty certain that the date of Stonehenge might be approximately fixed at the time of the megalithic building in Malta. Moreover, he was strongly of opinion that the Malta Temple would give a clue to what Stonehenge had been in the past. The photographs afforded a most interesting comparison between the two. Sir Norman Lockyer, they knew, had arrived at a certain date for the age of Stonehenge. He (the speaker) had arrived at the same period, within a few hundred years, by a totally different process of deduction. The great colonists of Tyre had fixed on Malta as a colony, and had introduced their megalithic buildings there at a date which was known, and if they compared Stonehenge with the Malta Temple the result seemed to give an absolute clue to the date and history of Stonehenge.

Smoke Abatement.

The Chairman, having thanked Sir Benjamin Stone for his remarks, then called on Sir William Richmond, K.C.B., R.A., to address the meeting on the subject of smoke abatement.

Sir William Richmond said that before he dealt with the subject which was down for discussion, he should like to offer his sincere thanks to the Institute council for the very generous subscription they had made towards the excavations in Crete. As Hon. Treasurer of the Cretan Exploration Fund he could thank them, though he did it on his own responsibility, for their generous advance towards the promotion of one of the most historically interesting works in our time, and he hoped the action of the Institute would be an impetus to other societies. As to the question of smoke abatement, he thought it excellent brotherhood that the Institute had acceded to his request, and that they should enter, not only with sympathy, but, he hoped, with activity, into a cause which must appeal to them as artists on account of the love they bore towards their predecessors' work in that noble and ancient art of architecture, and on account of their own work. If there were means by which the dismal smoke of London might be dispelled, or even modified, then they, as architects, by reason of their far-reaching influence as constructors, were the men best fitted to promote the acquisition of cleaner cities. Professor Church would tell them of the irreparable damage caused by the deposit of the acids contained in this soot, and they would have heard from Sir W. Thiselton Dyer, had he been able to be present, of the damage being done to the national gardens at Kew by the smoke from factories in the vicinity. That gentleman would have told them of his fruitless though earnest appeal to the First Commissioner of Works to execute his prerogative and force the manufacturers of Brentford, who were on the Parish Council, to prosecute one another. Some ten years ago there was a smoke fog which lasted for five weeks, and he happened to be speaking to Sir W. T. Dyer shortly after that on the subject of the effect of the smoke fog at Kew, and that gentleman told him that he had had the residuum of that fog weighed. It was scraped off the glass in the gardens at Kew (the area of glass was about one mile), for it could not be washed off, and according to Sir W. T. Dyer, the residuum weighed six tons. Certainly one quarter of Kew Gardens was being irreparably damaged by the smoke from Brentford, and members of the Coal Smoke Abatement Society were going to tackle the matter there. They had made representations to the First Commissioner of Works without avail, though he might add there was a rift in the clouds, for he had received a letter which showed that the First Commissioner might possibly use his weight, and do his duty. In the east end of London, in that part extending from London Bridge to the Nore, there were—along both sides of the river, and far back—on either side, thousands of factory chimneys which belched forth black smoke day and night, their owners defying every clause of the Act of 1891, by which such matters could be restrained by the local authorities. The Coal Smoke Abatement Society had used every endeavour to get local authorities to enforce the clauses in the Act, thinking it was better to make use of an Act already in existence than to try and make a new law for themselves. They had succeeded in a great many cases; in fact, in the majority of cases. They had succeeded, with one inspector and an assistant, in getting a larger number of fines on account of the infringement of the law than the County Council and all the Borough Councils put together. Now public opinion was being roused, and people were at last beginning to say: "Let us be rid of this nuisance." Parish Councils and Borough Councils and the London County Council were, in some respects, go-ahead bodies, and in other and important respects, sleepy bodies. These bodies, however, and the Local Government Board, which was pretty well always asleep, were beginning to whisper—"only whisper, mind"—among themselves: "It wont do for us to wink at the law any longer." It was not so much in the matter of public factories that the Institute could help the cause, although by giving the Coal Smoke Abatement Society moral support they would and could help, for the community at large would doubtless think more of a society that enrolled within its ranks a body of men such as the members of their profession, who were carrying on an art which in itself was essentially beautiful, but in the highest sense essentially necessary; and by the enlistment of architects in the army of crusaders, the Society would gain great moral vantage. But they could render the cause another service by promoting the idea among their clients that there was not the slightest reason why those most desirable open fires—the winter suns of England, he always called them—should darken their homes and render the outside air ugly and destructive. He thought he was right in saying that the habit was becoming more general for people to live in flats, and that practice would probably extend as land became more valuable in large towns. It was no use to imagine that open fires would ever be got rid of. In public buildings, should not architects in the design of them make some provision for warming them otherwise than by the wasteful method almost universally in vogue? It was hardly to be expected that people would be persuaded to burn nothing but anthracite coal, the use of which would be one means of getting rid of the nuisance almost entirely. What had to be provided was a smokeless grate, and when they had that architects should feel themselves bound to get their clients to use it. In blocks of buildings for the use of the poorer portion of the community, heat might surely be obtained from one great generating station, and the poor should be encouraged to cook by gas fires. Of course, the individualism of the poor was very remarkable, and there was something fine in their independence, but it was to be questioned whether such individualism was for their ultimate happiness; it engendered want and improvidence. How much better and more cheaply could they live if they would be content to act and partake in common! and although architects had no more power than any one else to dictate to the poor how they were to live, they had the power of recommending to such bodies as County Councils, Parish Councils, and others, to construct workmen's dwellings so that heat could be admitted throughout a large area, just as gas and water were. Why should there not be a heat rate as well as a gas and water rate? Of course, these were only suggestions, and possibly others had thought the same, and he was sure they were all as earnest as he was to protect works of art from destruction and to promote the cause of health and light, and consequently happiness, and to do individually, as well as collectively, what lay within their power to make the city they all loved more beautiful and desirable as a place of habitation for poor as well as rich. He hoped they would not separate that night without coming together as brothers in a great cause, which had at its root not only the æsthetic but the ethical influence which light, order, cleanliness, and beauty go to promote. In conclusion, he would move the following resolution, *i.e.*, "In view of a resolution of the Coal Smoke Abatement Society seeking the co-operation of the Royal Institute of British Architects, members are invited to join the Society, or that such other assistance be given by the Institute as the Council may deem desirable.

Mr. John Slater seconded the resolution. He said it must have been evident to every architect who had anything to do with London that the difficulty they met with was not so much the factory chimneys, which were under control, but the ordinary house-grates of the large and small buildings of the city. Of course, to a large extent, the difficulty was one of expense. If they were building a very large block of flats, it might be quite easy to adopt one general system of heating which would result in a very small amount of smoke, but with a large number of individual buildings which were put up, unless there was some power to control the speculative builder to force him to do his best to diminish the smoke curse which assailed London, he was sure very little could be done. He felt sure that most members of the Institute would join the Society, as he intended to do, and do all they could to help it and make it successful.

Professor Church said he had been asked to say a few words on the chemical aspect of the question. They probably all knew the chemistry of fog, of smoke, and of London atmosphere; but he would make one or two observations as to the chief constituents of that fog and of London atmosphere. In the products of imperfect combustion of coal, coke, gas, and anthracite we had not only soot, but tarry matters, sulphurous acid (which rapidly passed into sulphuric acid), and we found, also, a considerable quantity of ammonia, and what chemists called compound-ammonia. These products were partitioned in different ways. If it were not for the solid particles of carbon, the soot, the imperfect burning of coal would do little harm; but it was these solid particles which gathered to themselves the acids—the ammonia compounds—and these became deposited upon our buildings, plants, glass, &c. It was these solid compounds, latent in the imperfect combustion of coal, which did so much harm. Not only did these compounds blacken the atmosphere, soil, buildings, &c., but they brought these active chemical ingredients into close contact with the stone of buildings. Rain, it might be said, did that, but we did not have rain always with us, whereas smoke almost always was. Rain, moreover, "scrubbed" the atmosphere, as the manufacturers of gas said, and it took up the sulphuric acid and other agents and carried them to a great extent straight down on to the flat surface of the pavement, or road, or skylight, and did not to any appreciable extent act on the vertical surface of buildings; but soot lodged everywhere, laden with impurities, and attacked those surfaces. He had recently shown the extraordinary character of the incrustation on the plinth above the cornice of the dome of St. Paul's, which in some places was 3 in. in depth, and which contained only 1 per cent. of carbon, but ½ per cent. of tarry matter, and ¼ per cent. of ammonia compounds, which were so peculiarly deleterious to vegetation, and which did so much damage at Kew and in the neighbourhood of London. A great improvement had taken place in smoke-consuming grates for domestic use, but a good deal remained to be done in that direction. The mechanical washing of coal at the collieries helped to get rid of a lot of the sulphur, but no amount of washing would get rid of all, so that we should always have sulphuric acid produced, however perfect the grate might be, or the combustion of coal. For twenty-three years he had used in his house nothing but anthracite in fire-brick grates. He had found it no more expensive than the ordinary bituminous house coal, and there was no difficulty in lighting the fires, which was done either by means of jets of gas, or by the use of wood with a very small quantity of this enemy of art, bituminous coal. But he was bound to confess that it was impracticable to think that they would be able to get used nothing but anthracite, and in view of that, improvements in smoke-consuming grates were greatly to be desired.

Dr. des Vœux said he thought the matter interested architects more than any other body of men in London. He had taken some little trouble and interest in the matter of the abatement of smoke in private houses. In his investigation he was assisted by Mr. Bryan Donkin, a member of the Smoke Abatement Society; they began with the fact that the Englishman would keep to his open fire and the use of ordinary coal. He had tried to get friends of his to use anthracite or gas, but they

had reasons of some kind or other for not doing so—either that they could not get it, or it was too expensive; or, in the case of gas, that it burned away too much, or smelt, or dried the air. For these reasons they started with the proposition: "Can smoke be diminished from an open grate burning ordinary coal?" To test that, they had to go into the matter rather deeply. In the first place they had to get a chimney—and a chimney that they could pull about, take out the grate that was in it, and put other grates in. Then they had to get a room facing the top of that chimney so that they could measure the amount of smoke coming from that chimney. Through the kindness of Lord Esher, they had put at their disposal two rooms in H.M. office in Westminster, which were exactly what they wanted. In one room they found a fireplace very similar to the one in that meeting-room, which they took as a standard. It burnt a very large amount of coal and emitted a very large amount of smoke. That grate was tested for three days of eight hours and the result of the test showed that it was a wasteful and smoky grate, though its heat was fairly good. The results of their experiments were about to be published. In order to get further into the matter they advertised in two daily papers for so-called smoke-consuming grates, and as a result five grates were brought to their notice. Four of them certainly did diminish the smoke to a great extent, and one of them was very nearly perfection. It gave a great amount of heat—from 15 to 20 per cent., he thought, greater than any other grates—and it burnt 20 to 25 per cent. less coal than the next best to it of any sort or kind. Compared with the grate in that meeting-room, it burnt 50 per cent. less coal and gave 35 per cent. less smoke, and it gave much greater heat (50 per cent.). As to the tests, temperatures were taken in various parts of the room every half hour for eight hours. The amount of coal put on the fire was weighed, the number of times the fire was stoked was recorded, the amount of coal put on each time, the amount of unburnt coal left at the end of the eight hours, and the amount of ashes—and every fact of importance, in fact, was recorded. He thought these investigations (the first which had been carried out in a systematic way, as far as he knew) were extremely encouraging. As the results of the tests, what was wanted was some central board which would take up the matter and test domestic grates and show that a grate of a certain satisfactory standard could be obtained, and that in future no grate which emitted more smoke than that standard grate must be put in a private house. That only touched the question of smoke from sitting-rooms. They had not gone into the question of smoke from the kitchen grate, but in his own house he had got over the difficulty entirely. He had been in his present house four and a half years, and he had not had the kitchen chimney swept yet, and he got over the necessity by using gas for cooking. It was a very practical way, and he knew exactly what it cost him, which was a very important question. Clients might tell them that that was an expensive method to introduce into the house, and that food, when cooked by gas, tasted of the gas. He had had great difficulty in finding out how he could best get hot water, and he found it was best done by putting in a coke boiler, and in that way he not only got hot water, but he had been able to get steam heating for the house. At any time of the day or night he could get hot water of a temperature of 170 deg. The heating by a coke boiler cost him about 1s. 6d. a week—at the outside 2s. in the winter. He found he had so much hot water from his coke boiler that he had to put in three radiators, so, in addition to baths and washing apparatus, he was able to heat the passage in the house. Those facts proved that a great deal could be done if there was combined effort to do it. There must be some central board or authority to show that this could be done, and if it had to be shown the Royal Institute of British Architects was the sort of society in London to do it.

Mr. W. D. Caröe said that as a member of both Societies interested he should like to thank Sir Wm. Richmond for having brought the matter forward. It was interesting to hear that there was a very promising grate in existence, but they had not been told the price, which was an important matter. But he was afraid that that was not all. If they had the Central Board as suggested—which suggestion he entirely approved—how was it going to require that such a form of grate was to be put in all the houses which now exist? After all, the largest amount of smoke came from the small houses, such as were to be found in the east end of London. Well, Sir Charles Cookson, an energetic member of the Coal Smoke Abatement Society, had made a discovery which might be applied generally, if only the gas companies would help. Those companies had already shown what great profits they derived from the poorer classes by the penny-in-the-slot system, and it was a question which affected the poorer classes particularly, for rich people might be got to adopt special grates. Sir Charles Cookson's idea for getting the poorer classes to use the existing grates so that they should not create smoke was an exceedingly simple one. All that was required was a small gas jet, a little circular pipe put immediately under the bottom of the grate, with a few holes in it, and in the bottom of the grate was inserted a small marketable article called a "crater." Sir Charles Cookson said that was not absolutely necessary; but in any case it only cost 1s. 6d. Gas was only used for lighting the fire (of coke), and it was turned on for about five minutes or so, according to the draught and the result was a very comfortable fire. If the fire went down the gas had simply to be turned on again, and in two or three minutes the fire was quite bright. Moreover, in dealing with coke, very little stoking was necessary. Sir Charles Cookson had fitted up the whole of his house in this way, and has had a year's experience of the working of the arrangement, which had proved perfectly satisfactory, and it was exceedingly cheap. It seemed to him that what they had to do was to persuade the gas companies to put in the installations under the fires free of cost, just as some of the electric light companies in poor districts put in wiring, and if they did they would make an enormous profit themselves out of the carelessness of the users, and do much to solve the smoke nuisance. He had tested the method himself and had found it quite successful. Some time ago he had to deal with a house in which there was an old flue which very soon got fouled. He added to the grate the arrangement he had been speaking about, and the chimney had not required sweeping since.

The Chairman: I presume that in the flue you were speaking of they had been using all coal, and afterwards they used coke. So that the whole question is determined by people using coke instead of coal.

Mr. Caröe: Yes.

Dr. Wyld said that simultaneously with Sir Charles Cookson he began to use gas for the lighting of his drawing-room fire, and he found it perfectly successful, and more economical than wood even. It had this advantage: if one left the drawing-room for some time, and came back when the fire was almost out, except a small spark, by merely turning on the gas it blazed up, and one had a good fire in a couple of minutes. It was a most admirable plan. In reference to the gas companies supplying the apparatus free of cost, the Gas Light and Coke Co. had good reason to be thankful to him, but he could not get them to provide the necessary arrangements for lighting fires by gas, though why they would not he could not tell, for if they were to do so it would mean a gain to them of 300,000*l.* a year from extra gas used. As to the new grate referred to, the fundamental principle of it was a blower in a certain portion of the grate—in the bottom, instead of at the top. What he would strongly impress upon architects was that they should consent to build no house unless the grates had blowers, for the provision of blowers was most desirable in the lighting of fires, and nearly all the smoke in London was due to the smoke caused in lighting fires, and if blowers were provided that would be done away with. In his drawing-room there was a blower and the smoke had disappeared. The cost of a blower was about half-a-crown, and all that was necessary to fix them where they did not exist was to drill a hole in the ironwork, put in a peg, and hang on a sheet of iron. Architects designed beautiful grates, but why did they not provide them with blowers equally beautiful?

Mr. E. W. Hudson said he was afraid his experience would not endorse the last speaker's remarks about blowers. Blowers were good for drawing the smoke up the chimney, but they did not obviate the smoke. He had used them, but he had never found them prevent the smoke; the smoke passed up the flue, but it was there. It was quite true that the lighting of the fires in the morning was the cause of the smoke in large towns. He had an idea that in a new house at Eastbourne the flues were arranged horizontally in one shaft, and the smoke was consumed before it passed into the open air. He thought something of that kind might be done.

Mr. Julian Corbett said he thought that it had been shown that it was possible to combat smoke from the open grate, and he thought that the cause would receive great help from the Institute if the Institute would appoint a committee to consider the subject. The Coal Smoke Abatement Society had considered the subject from their point of view, and it seemed to him that it should be considered technically, and from the architect's point of view. Unless the views of architects could be met, they were simply beating the air, and it would be a great help if the Institute could see its way to carry on the experiments.

Mr. C. H. Brodie asked Dr. de Vœux if either of the grates he had experimented with was what was known as the "well fire"—a fire which was very common in the north of England. It was used, but not largely, in London at the present time. There were several makers of them.

Dr. De Vœux replied that he had tested one of them.

Mr. Brodie: Was the result satisfactory?

Dr. De Vœux: Fairly; much better than *that*—referring to the grate in the Institute meeting room.

The Chairman said he was sorry such hard things had been said about the grate in that room. It gave out a good deal of heat, whatever amount of smoke it produced. They had heard of an excellent grate, and some of them would like to know the name of the maker. He thought it was a pity that architects did not turn their attention more to the subject of smoke-consuming grates, but there would not be much encouragement if after designing a grate the client would not adopt it on account of the cost. That would mean that the design would practically become a present to the grate manufacturer, seeing that architects did not take any profit from building materials. It would also be very difficult to force the smoke-absorbing grate on to builders, for that was, he supposed, what they wanted a central committee to do. It would be a very difficult matter to get people who build houses to use these grates, or to adapt those which they had. If there was a simple means of adapting a grate burning ordinary coal to consume smoke, and the Society would show how it could be done, the Institute might be able to do something; as it was the Institute was quite willing to do what it could to assist in the furtherance of the objects the Society had in view, and he had great pleasure in putting the resolution to the meeting. Attention should be called to the resolution in their "Journal," and the Council would give the matter consideration at an early date, and see if they could arrange for a committee to look into the matter and see how they could co-operate with the Smoke Abatement Society.

The resolution having been put to the meeting and carried, a vote of thanks to Sir William Richmond was, on the motion of the Chairman, heartily agreed to.

The Chairman said that the next meeting of the Institute would be held on the 17th inst., when Mr. S. K. Greenslade would read a paper on "Planning of some Recent Library Buildings in the United States."

The meeting then terminated.

COMPETITIONS.

POLICE BUILDINGS AT SMETHWICK.—The Watch Committee of the Smethwick Corporation have had before them several sets of competitive plans for the new police buildings which are to be erected in Halford-street. They have, it is understood, decided to recommend the Town Council to accept those submitted by Messrs. Bailey & McConnel, of Walsall, and the work is to be proceeded with as soon as the necessary arrangements can be made. The estimated cost of the buildings is about 12,000*l.* or 13,000*l.*—*Birmingham Post.*

THE LAND TRANSFER ACT, 1897.—An order in Council has been prepared for submission to his Majesty in Council, whereby the date of the operation of the Act, in so far as it relates to the City of London, will be postponed from March 1 to July 1, of the current year.

CARPENTERS' HALL LECTURES.

ON Thursday, the 27th ult., Mr. H. H. Statham gave a lecture at Carpenters' Hall on "The Architectural Treatment of Bridges," Mr. Aston Webb, A.R.A., in the chair. He characterised the subject as being essentially a modern one, as until recently bridges had been regarded as purely utilitarian structures; even the mediæval bridges which we have regarded as picturesque were, to the men who built them, only the best practical method of building according to their knowledge and requirements. Recently there had arisen a perception that a large bridge in a city might be an important addition to the architectural character of the city. A solidly built arched stone bridge was in itself a structure naturally beautiful; it was only when we began to "ornament" it that we might run the risk of spoiling it. The old-fashioned bridges with narrow spans and semicircular arches were the most picturesque; but the demand for larger spans as our traffic grew more crowded and river craft increased in size, rendered it no longer possible to build bridges in this form; and led not only to wider arches but to the introduction of steel spans, either with stone or steel piers. Steel bridges were a practical improvement in facilitating the combination of wide spans with low gradients; but owing to their thin lines, they could never have the grand and monumental effect of a stone bridge, and they had the additional disadvantage of requiring constant painting, with all which they could not have as long a life as a granite arch. Then there were railway bridges, which were a separate problem, having to be constructed to fulfil special conditions in carrying heavy loads moving at great speed; so that structures which were satisfactory for ordinary roadways would not suffice for railways.

Bridges might be classed under three heads; (1) stone arched bridges; (2) steel spans with stone piers; (3) steel spans with steel piers. We might add a fourth class, now supposed to be rather *passé*, viz.: wooden bridges. These, like the stone arched bridge, were almost invariably picturesque from the very nature of their construction, as was shown in the instance of one of the timber viaducts originally built on the Great Western Railway; but for railways they had not the quality of stability and permanence, besides offering danger from fire, and it could not be supposed that any such viaducts would in future be erected on English railway lines. But for small bridges in country places timber was still a suitable material; such bridges also harmonised with the landscape; and it was much to be regretted that some of these picturesque and perfectly adequate wooden bridges on the upper Thames were being removed and replaced by iron ones, which might or might not have a longer life, but which were certainly not such agreeable or suitable objects in a rural landscape. Steel bridges on a large scale might be classified under the heads of beam bridges (or what engineers would call "girder bridges"), suspension bridges, and trussed bridges. He used the term "beam bridges," because such bridges were merely the application of the beam system of bridging an opening; laying a rigid beam across which bore vertically on the two points of support. A lattice girder was, no doubt, a trussed construction within its bounding lines, but regarded as a whole it was a beam; it acted as a beam; and it was or ought to be no more offensive to taste than a wooden beam performing a similar office. The Britannia tube bridge, in another form, was a typical beam bridge; and with its massive and simply treated towers was a fine object. Suspension bridges, like stone arched bridges, had the advantage of being almost necessarily beautiful in themselves, if let well alone. There was always beauty where a structure expressed, as it were, the forces of nature, whether in the balanced curve of the arch or the catenary curve of the suspension chain. The practical drawback to suspension bridges, for heavy traffic, was of course their lack of rigidity. Of what might be called trussed bridges the most important form nowadays was the cantilever bridge, of which the Forth Bridge was the most remarkable example, and by means of which greater widths had been bridged than had ever been attempted before. (The principle of the cantilever bridge, with its two arms and the straight length between, was illustrated by the photograph of two men seated in chairs and supporting a third man in the air between them, a whimsical but apt illustration originally made under Sir Benjamin Baker's direction). The cantilever principle, though only recently used on a large scale by engineers, seemed however to be a method that had recommended itself to uncivilised man, as was shown by photographs of a rude Chinese bridge and another made by North American Indians, both of which were cantilever bridges in a crude form.

Of all these classes of steel bridges it might be said generally that the less attempt at ornament on them the better. It was very difficult to put any ornament on a steel bridge which would not have a more or less gewgaw effect: the undisguised structure was far better and more sensible. *Pure structure was never in bad taste;* and the anathemas often made against every kind of engineers' steel bridge by æsthetic persons were very absurd. If the objectors knew a little more about structure they would find the steel structure in itself interesting, instead of regarding it as an abomination. Unfortunately the engineers were going rather in the wrong direction; they were spoiling this class of bridge by attempted ornament. Taking suspension bridges for instance, it would be seen from the illustrations how extremely simple were the Menai bridge, the old Hungerford bridge (now at Clifton), and the old Hammersmith bridge; while in the new Hammersmith bridge they had gigantic cast-iron foliage ornament of the most hideous kind, and such as would be enough to vulgarise any structure. Contrast with such a work the Auteuil bridge at Paris, with its plain structure in the spandrels, a little graceful ornamental treatment in the balustrade (where it was quite in place), and the fine stone sculptured figures on the piers, modelled by some of the first French sculptors of the day. Was not the contrast rather a humiliating one for London?

The Tower bridge was referred to as one which was a combination of suspension bridge, beam bridge, and lifting bridge. It was an unfortunate mistake to suppose that because it was near the Tower it was to be mediævalised. The way to harmonise with mediæval structures was to do as the mediæval builders did—build in the best way known and practised at the time. A steel structure honestly shown would have been far more in harmony with the Tower, in the true sense, than a piece of sham mediævalism. The first design for the Tower bridge however, by the late Sir Horace Jones (a view of which was shown) was much better than the one actually built, as it was simpler and more massive in effect, and the towers were genuine solid stone structures. Even in this design, however, there was a want of simplicity, the towers being weakened in effect by unnecessary decorative windows and other details. In the actual bridge these defects were much increased, but the greatest mistake of all was that these apparently massive towers were a complete sham, with no foundation at all, the walls being carried on steel girders; and before the bridge was completed for opening he (the lecturer) had looked under the walls of the towers, which stood over empty space. It was perhaps the most glaring instance of sham in building that had ever been seen. A sketch was shown on the screen to illustrate how such a bridge might be built so as to be a solid and genuine structure, the horizontal girders carrying the tie which connected the suspension chains being laid on the top of massive towers of stone brought out on each side as buttresses, and the ends of the horizontal members, resting on roller-beds, brought out to the front of the buttresses, so that it could really be *seen* what the suspension chains were attached to, instead of leading them through openings in the masonry as if they rested on it. The mechanism for raising the bascule leaves of the bridge, of which a section was shown, was a beautiful and simple contrivance which could not be too much praised; as an engineering structure the bridge was a splendid success; as an architectural design it was a flagrant piece of pretence. Even in regard to plain steel construction, there was such a thing as good and bad design. Contrast the elevation of the Sukkur bridge, in which there seemed to be no ruling element of line or disposition, as if the girders were tumbled together, with that of the Forth bridge, which by comparison was a quite classical design in its symmetry and unity of effect. Coming to stone bridges, they had to consider several points—the form of the arch, the treatment of the spandrel; the treatment of the piers. Semicircular arches were out of the question in these days of wide spans; they had to choose between the elliptical and the segmental form. The former looked best, as it rose tangentially from the pier surface while the segmental arch was butted against it; and the elliptical arch gave more height close to the pier; on the other hand it was flatter at the crown than a segmental arch of the same span, and for a large span required therefore very careful building. The voussoirs might either be treated on the same plane with the masonry of the haunches, as in London Bridge (which had a very fine solid effect), or they might be accentuated so as to leave a defined spandrel. Such a spandrel, however, should never be panelled, as at Grosvenor Bridge, Chester; that was a treatment for carpentry, not for masonry. The treatment of the soffit with groins, as in many mediæval bridges, was very effective for bridges on a moderate scale; but for bridges on a large scale there was perhaps nothing so fine as the sweep of the plain unbroken soffit. The projection of the piers, although there had been a kind of traditional notion since Renaissance times of decorating it with a columnar order, ought rather to be treated as a buttress. The raking lines of the balustrade and cornice should be stopped against the pier, not carried round it; the pier was a vertical abutment to them, and not any part of them. The old mediæval treatment of the buttresses as pointed to divide the current produced in itself a picturesque effect founded on practical requirements; but except in a tidal river this treatment should only be strongly accentuated on the up-stream face of the bridge. Character was given by thus suiting the build of the bridge to the run of the water, as was shown in the grand effect of the St. Lawrence Bridge, with its immense up-stream buttresses to break up the floating ice. Waterloo Bridge was an exceptional example in which the classic cornice was excusably used, because the whole bridge was entirely level from end to end. In London Bridge, where there was a gradient, Rennie, with true instinct, discarded the cornice and only used a small corbel table. The new Putney Bridge was a very good example, in the same school, of a granite bridge simply and plainly treated, with no adventitious ornament. Reference was then made to Blackfriars Bridge, and to the unfortunate design of the piers as stumpy granite columns of immense thickness, which could have carried a tower over them, and had nothing to carry but a balcony. These columns, like Alexander the Coppersmith, had "wrought us much evil," for engineers seemed to be so much enamoured of the effect that the first design for the new Vauxhall bridge was almost an exact imitation of Blackfriars bridge. The Institute of Architects had begged for a granite bridge instead of a steel one of this design; it was replied that the demands of the various authorities in regard to width of span and gradient rendered a granite arch impossible. Eventually a compromise had been come to by adopting a concrete arch with granite facings. The concrete arch itself was an admirable piece of construction on a somewhat novel principle; a section of it was shown and described; but in the so-called architectural treatment the influence of the Blackfriars stump column still prevailed, and the pier was treated with an enormous half round column which had nothing to carry but a lamp-standard, and this again had to be made far larger than necessary in order to appear to provide something for the column to carry. The whole thing was so completely out of scale that though the actual height was about 70 ft. from the water line to the top of the lamp-column, any architect would suppose from the scale of the drawing that it represented a structure about 30 ft. high. Then a heavy cornice of supposed classic style was used below the parapet and carried round the column on a raking line; an arrangement which could not be carried out except by "fudging" the mouldings at their mitre junctions; and another effect of this deep cornice was to leave so little depth for the centre voussoir as to make the centre part of the arch hopelessly weak in appearance. A design by the lecturer was shown (illustrated in the *Builder* of October 5, 1901) in which, on the same constructional lines, the pier was treated in a buttress form; and by substituting for the heavy cornice a simple corbel-table (as in

London Bridge) a greater apparent depth was given to the central voussoirs, while the whole of the voussoirs were treated in a slightly decorative manner, by fluting each alternate one, so as to suggest the idea of their being what they actually were—a facing or revêtement, not an essential element in construction. Another design was shown for a different treatment of a pier, with the flat central buttress member turned round at right angles to the line of the bridge, and carrying the lamps also at right angles to the bridge.* This had a very bold effect, and there was something to be said for it in a practical sense.† When he had exhibited this design in connexion with a paper read a little while since before the Birmingham Architectural Association, one of his audience remarked that it was "Gothic feeling with Classic detail"; and that in fact was exactly what he was driving at, and suggested the moral with which he would conclude, viz, that if anything satisfactory was to be done in the architectural treatment of bridges, it would not be by plastering on to them architectural details meant for quite different situations, but by returning to the mediæval principle of so designing the lines of the masonry as to make them in themselves expressive and characteristic.

Mr. Aston Webb said he must ask them to pass a hearty vote of thanks to Mr. Statham for his lecture. He did not think there were many ladies or gentlemen in that room who would be likely to build a bridge—he felt sure he would not—and though ladies were becoming architects he did not think they would be asked just yet to put up bridges; but though it was unlikely they would be called upon to build a bridge, it was important that they should have some notion of how one should be built. It was also desirable that where there was a fine bridge—as there was in London and in many of our towns and country places—we should know how to value it and keep it. Mr. Statham had not only criticised the design of bridges which had been erected or were about to be erected, but he had shown them what, in his view—a view with which most of them would agree—were the lines on which bridges should be put up. There was hardly anything more poetical or romantic, he thought, than a bridge. The connecting of two banks by solid material and the passing of traffic over it, or the cross traffic underneath on the water-way or roadway at right angles to the traffic over, always formed a subject of interest, and must impress even the most unreflective. He thought they would all agree with Mr. Statham that the interest which was connected with bridges was best obtained and preserved by the simple proportions of the bridge itself. We did not want to be distracted by little bits of ornament and misplaced construction, which was really not construction at all. It was not for him to go into a criticism of bridges which had been built or were about to be built, but as to London Bridge he endorsed Mr. Statham's remarks in regard to the necessity or not for widening that bridge. It might be a necessity, but whenever he had had occasion to cross the bridge his traffic had never been interfered with, and since the Tower Bridge had been erected he had been able to get across London Bridge with the greatest ease. But if the bridge must be widened—and he supposed they must accept the opinion of those in authority as to that—they were entitled to know what was going to be done, so that they might be in a position to know whether what was going to be done was the best thing to be done; and for this reason he thought the lecture had been of considerable use. One great difficulty in a stone bridge was that the arch from its nature was never at rest; it was always press-out and, to some extent, upwards. Stability was obtained in a building with an arch by weighting it at the top, but that was a thing which, in large span bridges, which now of necessity were constructed across great rivers like the Thames, was almost an impossibility, and a very narrow depth of masonry over the top of the arch must always give, to some extent, an idea of weakness, for there was nothing but a thin line of roadway for the arch to carry. He thought Mr. Statham was right in omitting the cornice in his design for Vauxhall Bridge and deepening the arch as much as possible. Much as we admired London Bridge and Waterloo Bridge, one had to give way—and we gladly gave way—to the French as the great bridge designers of the day. The new bridge for the Paris Exhibition was acknowledged by all artists and all who were interested in such matters to be a magnificent bridge. We must hope that Vauxhall Bridge would be able in some way to vie with that bridge, but it was not for him to say whether it would or not.

The vote of thanks having been seconded, was cordially agreed to, and, Mr. Statham having briefly acknowledged it, the meeting terminated.

The lecture was illustrated by more than sixty lantern slides of bridges of various kinds, arranged so as to successively illustrate the various points touched on in the course of the lecture.

* This design is illustrated in the present issue of the *Builder*.

† See further description under the head of "Illustrations."

SOCIETY OF ARTS.

ON Tuesday evening Mr. Gerald Horsley read a paper at the Society of Arts on the subject of "Structural Colour Decoration of the Interior of Public Buildings." Mr. Walter Crane occupied the chair. The title, Mr. Horsley said, made him at once think of two kinds of public buildings, namely, first of those buildings which had been constructed of such materials as to carry out a previously conceived scheme of colour decoration, the floors, the walls, and the roofs having been constructed of materials which make up a colour effect; and, secondly, those buildings, which after their completion in the rough, had been decorated in colour in a manner which made that colour one with the materials. Therefore, they might consider the subject in two parts or divisions:—1. Those buildings whose actual materials formed a colour scheme, such as the Duomo at Siena. 2. Those buildings which on their completion had been decorated in colour in a manner which made that colour one with the materials of the building, such as St. Francesco at Assisi, or the Borgia apartments in the Vatican. But these two kinds of decoration might overlap and react upon one another, for, of course, one building might represent both. A cathedral, a church, a parliament house, a town hall, a theatre, a railway station, all come within our view and opened a wide field for consideration.

The methods of decoration possible under these two main heads were very various. The colours of the stone and wood used, fresco, tempera, oil paint, plaster work, sgraffito, mosaic, tile work—all had a claim to a place in our thoughts. But although this wealth of art methods was open to our use, and we had intimate knowledge of its processes, there were but few public buildings in this country which had any structural colour decoration, and there was but little demand from the public for works of the kind. It was remarkable that since the sixteenth century in England the practice of decorating in colour all our buildings, both public and private, as a natural and expected action, had declined; as if our countrymen, who lavished colour in cathedral and castle during the centuries preceding the Reformation, had suddenly lost all hearty desire to beautify their buildings in this particular way.

It had been said that the revival of letters 400 years ago made it no longer so necessary that the walls of public buildings should furnish a literature for the people, and thus a great incentive to noble, historical, and allegorical painting died. Together with the sciences, the painters became learned and conscious. The naiveté of the earlier masters changed to greater care in exactness of representation, but with the old impossibility of the human race to do all things well and perfectly at one and the same time, their works lacked the simplicity and dignity of the earlier period. Architecture thought more of itself and less of the other arts which had previously combined with it to form an organic whole.

On the other hand we had, however, to notice that the Continent had never lost in the same degree as ourselves its interest or delight in the use of colour decoration. Changes not dissimilar to our own had taken place, but the arts of architecture and painting never lost touch one with the other as they did here. In Italy to this day a colour scheme in a new building had a prominent place. In France, a church, a mairie, or a theatre—even a railway station—was not considered complete until it was painted in tempera or with canvasses, "marouflé," so that they formed part of the building. Such conditions as these might also be found in Germany and Austria. England alone seemed with but few exceptions to disregard colour as a necessary element of beauty in the designs of the interior of her public buildings.

Considering first those buildings whose actual materials formed a colour scheme, this was a method of decoration more in favour with the last generation of art workers than at the present day. We were reminded of the buildings of the "Gothic revival," of the works of Butterfield and Street; buildings which were the result, no doubt, of visits to Italy, where their prototypes may be found. The results obtained were often cold looking, harsh, and mechanical, owing perhaps to the mathematical accuracy of modern building methods, but there was a principle underlying it all which could not be lightly dismissed. Butterfield did not introduce his coloured work with the sole intention of breaking up the appearance of the wall surface: his aim was to get a permanent wall decoration, one which would outlast the usually improperly made plaster wall covering. He set himself to produce something suitable, lasting, and easily kept clean. He did this admirably. Take, for instance, the wall surface at All Saints', Margaret-street. First there was a dado of full colour some 5 ft. high of tiles, above large scenes from the New Testament painted on tiles. Above the arches of the nave arcade the wall surface was stone inlaid with bold patterning in tiles and dark inlay. On the east wall only was there any painting—frescoes by Dyce in panels spaced between margins of alabaster. The roofs were vaulted and painted in the chancel, and painted wood in the nave. With the exception of the pictures on the east wall there is not a scrap of plaster in the church, and no one would deny that the scheme is interesting and good. In Keble Chapel there is a very similar scheme, but in materials more precious, as befitted a college chapel of such importance. Here the lower part of the wall had an arcading of stone, with the spandrels formed of coloured bricks. Above a height of some 10 ft. from the floor were pictures in mosaic, framed in stone, forming a large and striking frieze running round the chapel; above it windows filled with painted glass at some height, therefore, from the floor; between and above these were more bands of coloured brick. The roof is vaulted, painted to represent stone. Here again, therefore, except in the painted roof, the ground of which, he suspected, was in well-made plaster, there was no plaster used, and the whole effect was one of great dignity. To our eyes, nowadays, such a method as this would require to be carried out on the broadest and simplest lines; we should also demand that the materials should be worthy. The black, white, and yellow bricks of fifty years ago had few charms for us now. It was open to us, however, to use the differently coloured stones we had, or our own native marble, while, thanks to the discovery and reopening of some of the old Greek and African marble quarries by men of energy and foresight like Mr. Samuel Brindley, of Messrs. Farmer & Brindley, ancient sources of supply were no longer closed to us. So long as we arranged the materials at our hand, be they of clay or stone, with breadth and simplicity, we should be treating them with the dignity they deserve; and in buildings of importance we should be treating ourselves with greater consideration if we invested our patterns with some meaning and intention.

The second division of the subject—buildings which, on their completion, had been decorated in colour in a manner which made that colour one with the materials of the building, offered a larger field for examination. It brought us into touch with the methods employed by our fellow artists the painters, and other art workers. In this class of decoration conspicuous success had attended the efforts of some of the municipalities of the country. Manchester was most fortunate in having commissioned Ford Madox Brown to paint the scenes from her history in panels in her Town Hall. Glasgow was employing some of her own sons, Messrs. Henry, Lavery, Walton, and Roche, in her City buildings. The Corporation of Liverpool, acting wisely on the advice of their architect,

had commissioned Mr. Charles Furse to paint the pendentives of their large dome, illustrating scenes from the commercial greatness of their town. Birmingham had commissioned some of the students of her Municipal School of Art to paint scenes of history in panels in the Town Hall. The Corporation of Colchester, also, in the new Town Hall, on the advice of their architect, Mr. Belcher, was employing the master of the Art School to decorate the council chamber and Moot Hall under his supervision and with his assistance. In London, in our own Royal Exchange, the Corporation of the City of London, together with some of the great City companies, had commissioned artists to paint the panels of the ambulatory. For some years past the municipalities of our towns had been fostering a love and appreciation for our arts by buying pictures and placing them in suitable galleries. This virtue of acquiring beautiful things had now been supplemented by the further step forward in giving commissions for mural painting.

Before speaking of different forms of painting available, he would like briefly to touch upon the possibilities offered to us by the use of marble, mosaic, and plaster, stucco duro and sgraffito. These were so closely allied to the first division of the subject, that he would speak of them here. We knew that the Egyptians, Greeks, and Romans used colour largely in their buildings, but we could have but little idea of the magnificent effects often attained by means of their fresco painting, encaustic painting, tempera, modelled plaster, mosaic, marble linings, and veneering, bronze, ivory, gold and silver, overlaying and inlaying. In considering the use of mosaic at the present time, they might hope that the modern habit of preparing mosaic tesseræ face downwards on a sheet of paper laid on a flat table, and then pressing the sheet of paper into position had been finally given up. Sir William Richmond had shown in the work which he had done that there was no more trouble, and no appreciable loss of time in doing mosaic work in the only true way, viz., pushing it in tessera by tessera from the front.

Time would not permit him to speak of modelled plaster and sgraffito in any detail, except to express the satisfaction they must all feel that these ancient arts of tried quality were understood and worked in a modern spirit to-day. As to the principal methods in use by painters, probably the world had never seen a more beautiful method of painting than Buon or true fresco, but, alas, its use had not been fully justified in this country.

As Professor Church had told them—"In the case of a dry wall, free from soluble saline matter, and exposed to a pure atmosphere, fresco may remain good for centuries. But in air contaminated with the products of the combustion of coal and gas and with tarry and sooty impurities, a fresco picture soon perishes. The binding carbonate of lime is converted into the sulphate, breaking up the paint. The same causes will form sulphate of magnesia from the carbonate of magnesia in the plaster, and the paint will scale off." In our large towns, therefore, to-day, Buon fresco had no chance of lasting.

The stereochrome or water glass process promised better, but we had very little experience of its behaviour.

In the consideration of the possibilities of tempera painting they were on surer ground, no longer so fearful of the consequences of the contaminated atmosphere of our towns.

The paintings by Mr. Gambier Parry at Higham and Gloucester Cathedral, Lord Leighton's "Arts of War" and "Arts of Peace," at South Kensington, and seven paintings by Ford Madox Brown, in the Town Hall of Manchester, were examples of this method. They appeared to be standing well. Professor Church considered that a sound medium was to be found in the proportions of—

	ozs.
Oil of spike	12
Paraffin wax	4
(The two mixed by heat.)	
Copal picture varnish	20

He advises the pigments being mixed in blown linseed oil, rather than in the medium itself, as Parry recommends. It was but a step from these wax and oil mediums to the method generally adopted by painters to-day; he referred to the prevalent custom of painting in oil on canvas, and then, on completion of the picture, having it fixed, or *marouflé*, as the French call it, to the wall or ceiling; the colours used being simply oil colours, with a medium of wax and turpentine. Some of the modern works of this class had been painted entirely in the studio; a practice which must surely carry with it its own condemnation. It was not possible for the painter to be confident as to the correctness of his scale or of his colour, both of which must surely be influenced by the size and lighting of the building, an intimate knowledge of which is revealed by working in it. Could they suppose that the ceiling of the Sistine Chapel would have been so magnificent as it is if it had been painted in a studio and then fixed in position? It was to be hoped that the convenience of this modern method of wall painting would not deter painters from working directly on the plastered wall in tempera, oil, or encaustic. If the beautiful qualities of fresco were denied to this country, there were yet the qualities inseparable from a plaster ground, which a canvas surface could never present quite in the same way.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE tenth meeting of the Discussion Section of the Architectural Association for this session was held at 56, Great Marlborough-street, W., on Friday last week, Mr. R. H. Weymouth presiding. The minutes of the last meeting were read and confirmed. The Chairman announced, with much regret, the decease of Mr. H. Rose, who was an old and valued member of the Discussion Section. Mr. Geo. H. Smith proposed that a letter of condolence be sent to the family of the deceased gentleman, expressing the sympathy of the members of the Section.

The Chairman then called upon Mr. Vivian H. King to read a paper, entitled "Design in Furniture," which is printed in full on another page.

The discussion was opened by Mr. W. Bonner Hopkins, who said it had been a great treat to listen to Mr. King's most delightful paper, and he proposed a hearty vote of thanks. He thought it was a difficult matter to make furniture expressive in design, and that designers were often the puppets of the times, having no control over circumstances. Much was to be learned from the study of the best old work, and he thought the worst period of furniture was that when little or no attention was paid to old work. He had a great objection to the so-called "new art," and thought we were suffering from too much individuality. The highest form of art should be unconscious.

Mr. H. P. G. Maule, in seconding the vote of thanks, said Mr. King's paper had brought to their notice many important and interesting points. Furniture should show thought and suitableness for its purpose. In designing furniture we should pay great attention to health, and avoid recesses and dust traps.

Mr. Geoffrey Lucas, in supporting the vote of thanks, said we should consider the "moving of furniture" in our designs. He found a great difficulty in obtaining a satisfactory bedstead, and thought some contrivance might be devised for hanging one's things at the foot of the bed.

Mr. W. A. Forsyth said the reader of the paper brought home to architects the necessity of studying furniture in order to obtain scale in their rooms, and that more attention should be given in planning to the disposition of furniture. He objected to veneer, and thought all designs should be constructional.

Mr. Weymouth, in supporting the vote of thanks, said Mr. King had covered a wide field in a very able manner. He was afraid it was impossible for architects to take up furniture designing in addition to their multifarious other duties. In the best periods the furniture was designed by cabinet-makers, not architects. The work of architects was often heavy and unsuccessful. Some beautiful effects were produced by ebony and mother-of-pearl inlay. He would like to see stamped leather work more generally used, and thought gilding was very suitable. He could not agree with Mr. Forsyth in condemning veneer.

Mr. Phillips said, as an enthusiastic student of furniture, it had given him great pleasure to come down and listen to Mr. King's excellent paper. In primæval times, perhaps the stool was the earliest piece of furniture called into use, and he thought the hall and claw chair might be traced to the stool with the skin of an animal placed over it with the legs hanging down in front and back. From the twelfth to the fifteenth century there was a strong feeling of Saracenic work in some of our English furniture side by side with Gothic; for instance, the "Saxon" chair at Warwick and the chair of Erasmus. The Stuart chairs showed marked evidence of Roman influence. He greatly admired the use of the scallop shell ornament in Tudor work. The best old work always showed a sense of fitness and proportion. The French furniture of Louis XIV. and XV. periods was marked by great extravagance of ornament, and he thought one came back with redoubled pleasure to well-designed, plain, and simple pieces of furniture. The architect had not always been a success in furniture design.

Mr. Guy Dawber, the Special Visitor of the evening, remarked upon the extreme thoughtfulness of Mr. King's paper. He thought architecture had in all times influenced furniture. In the sixteenth century we had the Renaissance, which was followed in the seventeenth century by the Classic revival. In the reign of William and Mary there came a great influx of foreign furniture into our country, but with Queen Anne we found furniture again following architecture. Wren's school of carving influenced the work all over the country. He thought that much of the furniture that was attributed to Chippendale was the work of other men, and that Chippendale came into prominence through the publication of his book, which was a collection of designs in use amongst the cabinet-makers of his day. Prior to Chippendale we have the published work of one William Jones, an architect, and it was interesting to note that at a mansion in Gloucestershire the original signed drawings of some work designed by Jones were still in the possession of the owner of the mansion. He instanced the influence the work of Robert Adam had on the furniture of the period, and attributed the lack of design in the furniture of the nineteenth century to the absence of tradition amongst architects. It was a period of revivals. The domestic architecture of the present day was much more hopeful, and would influence furniture design. Architects should study the disposition and arrangement of furniture, but the craftsman should be unfettered. Simplicity and adaptability should be studied in design, and every attention should be paid to proportion and delicacy of ornament. It was also necessary to study the adaptability of shape and form to the material employed. Inlay should be used, but should be architectural in feeling. Mr. Dawber instanced the very successful work of some men of the present day.

The vote of thanks to the author was made to include the Special Visitor, and was passed with acclamation.

The next meeting will be held at 56, Great Marlborough-street, W., on the 14th inst., when Mr. H. C. Lander will read a paper on "Co-operative Homes."

THE SANITARY INSPECTORS' ASSOCIATION:

EVOLUTION OF THE LONDON SANITARY INSPECTOR.

THE usual monthly meeting of the Sanitary Inspectors' Association was held at the Carpenters' Hall, E.C., on Saturday, Mr. T. Young (vice-chairman of Council) presiding.

After the election of a number of members and associates, Mr. A. G. Duck, Chief Sanitary Inspector of Woolwich, read a paper on the "Evolution of the London Sanitary Inspector." The London Sanitary Inspector, as they knew him, was a comparatively recent statutory designation. There were no prehistoric specimens, and the present-day action of an intelligent inspector was never heard described as fossilised, but rather the reverse, in the respect that he was generally considered in advance of the times. This recent creation was due to a progressive demand, called into existence mainly by the aggregation of the masses into small areas, and the march of civilisation. In dealing with the term "London," it was necessary to understand the area that was referred to. Much of the district with which they were familiar under that designation was formerly fields, and in many respects quite rural. Our present County of London, with its area of 118 square miles, in 1800 contained less than 1,000,000 people; the last census taken in 1901 gave a population of nearly 5,000,000. The City of

London was of great antiquity, and enjoyed many exclusive privileges. At an early date it realised in a measure its responsibilities, and made by-laws relative to matters pertaining to public health, cleansing, &c. How they were enforced and carried out may be open to question, which may be partially solved by the consideration of a small book published in 1741, entitled, "A Citizen's Complaint against Public Nuisances." This appears to be what they should describe now as a series of complaints, in which the said citizen called attention to the serious condition of the slaughterhouses in the city and suburbs. He referred at great length to the keeping of swine, which were noisome and offensive creatures, liable to cause infectious and contagious distempers. There were, he says, "from two to three hundred of these animals kept in styes, no further off than Whitefryers, near the Temple." He also made reference to the pollution of the atmosphere of the City of London by the soap boilers and tallow chandlers, and made an attack on a person he describes as "Mr. Scavenger, or his deputy," who, he said, "is not so ready to perform his duty as to take his money," and deems it very hard that he should have to pray and pay. "The Society for the Promoting and Reformation of manners in the Cities of London and Westminster" complained in 1721 of an abuse "caused by butchers and poulterers setting up shops and stalls in the best and most public (as well as private) streets, from one end of this great town to the other; this practice increases so much every year that if not put a stop to will, in little time, be one of the greatest nuisances among us. Happy would be the people if the removal of nuisances could be obtained without the delay and expense that attends it." It appeared, judging from these complaints, that the Corporation were not all that could be desired at that period by the sanitary reformers.

Until the latter part of the eighteenth century, and even until 1855, the local government of London, the administration of any laws that had relation to health, was extremely unsatisfactory; each district went on in its own way, obtaining its own Acts of Parliament to suit its own local conditions, and more especially the convenience, he respectfully suggested, of the then local administrators. In the present London area, therefore, there must have been hundreds of local Acts. In this connection there was an attempt at reformation in 1817 by the passing of the General Paving (Metropolis) Act, also known as Michael Angelo Taylor's Act. Prior to this, scant references were made to nuisances as they were now acquainted with the term.

After a reference to the duties of sanitary inspectors in the administration of the Adulteration Acts, Mr. Duck expressed regret that a position on the Examination Board for Sanitary Inspectors was still denied them. Chemists, engineers, architects, and doctors were all examined by a board of experts in their own professions. Sanitary inspectors were examined by any but sanitary inspectors. Evolution must, he urged, assert itself in this particular, and eventually right this wrong. That Association had not ended its work, but had now developed into healthy and thorough working order, thanks to their most able pioneers.

Mr. Duck was, on the motion of the Chairman, thanked for his paper, and the Association afterwards discussed in committee a scheme of federation with other sanitary inspectors' associations.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on the 3rd inst., Mr. Percy Griffith, President, in the chair, a paper was read on "British *versus* American Patent Law Practice and Engineering Invention," by Mr. Benjamin H. Thwaite. The author in his prefatory remarks pointed out that during the nineteenth century and up to the seventies British engineering was supreme, and that the railway, gas, sewage, and other undertakings—the productions of British inventors of the early part of the Victorian era—were almost exclusively designed and constructed by British engineers and with British constructional machinery. At the end of the last century the marvellous progress of the Americans displaced England's industrial supremacy, especially in metallurgical and engineering developments. Much of the engineering work that was once controlled by British engineers was now being carried out by American engineers. The progress of American manufacturing and engineering industry was directly due to the encouragement held out to inventors by the successive United States Governments from the time of Washington. The encouragement given to American inventors by the Act of 1861 had rewarded Americans with a wave of unequalled prosperity. The author pointed out that the British policy in reference to the inventor was quite different from that of the United States; that whereas the British inventor might obtain a British patent, which was merely a registration of date and the printed disclosure of the invention, and for which, for a period of validity of fourteen years, he had to pay no less than 99*l.*, the American inventor was given, for the sum of 3*l.* odd, the benefit of an unprejudiced examination and investigation by technical experts. If the patent passed successfully through that ordeal the inventor had to pay an additional fee of 4*l.* for which he secured, without any further payment whatsoever, the right to the patent for a period of seventeen years from the date of application. The chances that an American patent would pass safely through a law contest were 74 to 100, whereas the chances of the British patent being found valid were only 58 to 100. To demonstrate the deadly effect of the yearly taxation of the British patent system, the author stated that of the 138,517 British patents applied for during the last five years, some 104,000 became void in the fifth or sixth year from the date of the application, and the British Government would have drawn in fees from those abandoned patents nearly three-quarters of a million sterling. In ten recent years the profit surplus earned by the British Patent Department was over one million sterling; while the American Patent Department earned a profit of 275,000*l.* The author referred to the economic policy of the United States manufacturers, which explained the reason why comparatively modern plant was often replaced by new appliances which earned increased profits by their improved efficiency. He recommended the adoption of the American patent system, which policy would stimulate the inventive characteristics of the British race. He referred to the 1901 Committee appointed by the present Government to inquire into the British patent system, and gave their main conclusions and opinions, which were strongly in favour of stringent legislative revision; and he called attention to the recent introduction into the House of Commons, by the Government, of a Bill having that object. In his final remarks the author observed that so long as England had the trade of the world practically to herself she could handicap the representatives of her industries with almost intolerable burdens with impunity, but those burdens must now be removed, or England's champions would be compelled to cry "peccavi," and retire discomfited from the arena.

THE INSTITUTION OF JUNIOR ENGINEERS.—The members of this Institution recently paid a visit to the new baths and washhouses of the Metropolitan Borough of Fulham, shortly to be opened; and situated in Melmoth-place, Fulham-road. The architect, Mr. H. Dighton Pearson, A.R.I.B.A., showed them over, and fully explained the numerous features of interest. There are eighty-four private baths; a swimming pond, 60 ft. by 20 ft.; one 100 ft. by 30ft., with folding dressing-boxes; and another 125 ft. by 33 ft.; establishment laundry; public wash-house for sixty-six washers; hydro-extractors and drying-horses; ironing-room; three Galloway boilers, economiser. The chimney is 80 ft. high, and there is a water storage tank for 41,000 gallons. Steam is taken from boilers to hot-water heaters under each set of private baths. The ponds are heated by steam ejectors; the building by hot-water radiators. The Artesian wells are worked by air-lift pumps. The building contract was let to Mr. Charles Wall, of Chelsea, for 42,953*l.*; the engineering, electric lighting, well-sinking, and pumping machinery, cost 15,000*l.*—The next paper is to be read on Friday, March 14 (postponed from March 7), the subject being "The Uses of Engineering Models," by the Chairman. On the following evening the Annual Conversazione takes place (postponed from March 8).

THE CAERWENT EXPLORATION FUND.

FROM the recent report of the Excavation Committee in regard to the work carried out by the Caerwent Exploration Fund during 1891, we learn that the field adjoining to the North Gate has been purchased by the President, Lord Tredegar, and excavations have been carried on in this field as well as in the field already in their occupation. The cost of the work in this North Gate field has been entirely defrayed by Lord Tredegar; and the funds contributed by the subscribers have been expended in completing and extending the work begun in 1900, in the nine-acre field in the south-west quarter of the city.

The work of the year has consisted, therefore, mainly in the excavation of the west wing of House II. and of the whole of a large house, which is numbered VII. on the plans, and in opening out the North Gate, and in excavating the field to the south of it. The gateway had been filled at some later period with capitals, corbel stones, and massive blocks, doubtless from the ruin of some adjoining building. A curious passage or culvert of massive stone slabs leading down to the gate has also been uncovered. The field adjoining the gate contains several buildings, the excavation of which is nearly completed. There is work still to be done on the site of the street or road leading through the gate, which presents some curious problems of levels; and the outside of the gateway, where the spring of the arch is still visible, has yet to be explored. The Committee, therefore, have postponed all detailed report of this portion of the work until next year, when it is hoped that the completion of the excavations may have provided a solution of the difficulties.

The two houses (II. and VII.), of which complete plans and detailed reports were presented to the Society of Antiquaries on January 16, and will shortly be printed and issued to all subscribers of a guinea and upwards, were of unusual interest. They were both large houses of the courtyard type, but they differed from the type commonly found at Silchester, in having suites of rooms arranged round all four sides of the central court, whereas at Silchester the courtyard type of house usually has rooms on three sides only. In House II. a large and very interesting hypocaust was found in which the *pilæ*, each formed of a single stone, actually rested on a tesselated pavement (still intact) of the earlier house. This hypocaust was doubly interesting owing to the fact that the floor and the overlying pavement were still *in situ*, and afforded a good example of the method of supporting the floor. A portion of the hypocaust has been removed and re-erected in the temporary museum. The other most important features in this house were a channelled hypocaust and a series of small baths, in one of which the leaden drain-pipe was still to be seen as it passed through the wall.

It is hoped to resume work early in this summer; but the funds raised last year have all been expended, and it will be necessary to raise a large sum—at least 300*l.*—to enable the Committee to complete the excavation of the nine acres already in their occupation.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. A. M. Torrance, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council 7,860*l.* for street improvement; Lambeth Borough Council, 8,860*l.* for paving works; Southwark Borough Council, 6,150*l.* for electric light installation and 6,725*l.* for street-lighting purposes and meters; Woolwich Borough Council, 600*l.* for paving works; Finsbury Borough Council, 2,000*l.* for contribution towards cost of purchase of Alexandra Park; Islington Guardians, 15,000*l.* for the erection of an infirmary; and Mile End Guardians 1,600*l.* for various purposes.

Petition as to Working Class Dwellings.—Dr. Collins presented a petition signed by 400 inhabitants of St. John's Wood praying that houses for the working class should not be erected at Grove End-road. The petition was signed by Sir L. Alma Tadema, R.A., Mr. McWhirter, R.A., Mr. G. Frampton, R.A.,

Mr. Alfred Waterhouse, R.A., Mr. Phil May, Canon Duckworth, and others.

Local Taxation.—The adjourned Report of the Local Government and Taxation Committee was again before the Council. It dealt at great length with the proposals of the Royal Commission on Local Taxation, and the Committee made twenty-seven recommendations. Recommendation "a" was "That it is desirable, in the interest of uniformity, that the valuation authority for the administrative County of London should be appointed by the London County Council."

Mr. Cousins moved as an amendment that the words "be appointed by the London County Council" be struck out, and the following words substituted—"consist of members appointed by the London County Council, and of the Chairman of each District Committee of the Metropolis."

Mr. Sankey seconded the amendment.

The amendment was defeated, and the recommendation carried.

Votes of Thanks to the Chairmen.—Sir Arthur Arnold proposed that the best thanks of the Council be accorded to Mr. A. M. Torrance, the Chairman, for his courteous and impartial conduct in the chair during his year of office. None of Mr. Torrance's predecessors had been more distinguished for devotion to the interests of the Council and assiduity in its work.

Mr. Beachcroft seconded the motion, and it was unanimously agreed to.

On the motion of Dr. Longstaff, seconded by Mr. N. Robinson, a vote of thanks was passed to the Deputy-Chairman, Mr. M'Dougall.

Mr. W. Crooks proposed a similar vote to the Vice-Chairman, Colonel Rotton, and this was secouded by Dr. Forman, and agreed to.

Applications for Electric Lighting Provisional Orders.—The Highways Committee reported as follows :—

"The Bermondsey Electric Lighting Order is in respect of those portions (namely, the parish of Rotherhithe and the district of St. Olave), of the Metropolitan Borough which are not covered by the order granted in 1899 to the then existing Vestry of Bermondsey. The Order contains a new clause to authorise the Borough Council to provide, sell, let for hire, and fix, set up, alter, repair, and remove, but not to manufacture, lamps, meters, electric lines, fittings, apparatus, and things for lighting and motive power, on terms and conditions to be agreed between the Borough Council and the parties concerned. This appears to us to be to some extent provided for by Clause 76 of the Council's General Powers Bill, which is as follows :—'It shall be lawful for the Council of any Metropolitan Borough being authorised to supply, and supplying, electrical energy, to expend money upon the wiring and fitting, and supplying with wires, fittings, and apparatus, the premises of their consumers or prospective consumers, and to enter into any and carry into effect agreements and arrangements with respect thereto, and to make such charges therefor, whether directly or otherwise, as they may think fit'; and the following clause (77) is to authorise the Borough Council to borrow money for the purpose. We see, however, no objection to the provision being made in the order, as the Borough Council appears to so desire. The Order requires amendment as regards the maximum price, and this we have prepared. We recommend—"That the Board of Trade be asked to insert, in the Bermondsey Electric Lighting Order, the amendment, as regards the maximum price, prepared by the Highways Committee."

An amendment to refer the matter back was defeated, and the Committee's recommendation was then agreed to.

The Rating of Site Values.—The Parliamentary Committee recommended that steps should be taken for the introduction of the Site Values (London) Rating Bill in the present Session of Parliament in the form in which it was introduced in the Session of 1901.

Mr. Beachcroft moved, as an amendment, "that it is inexpedient, in view of the recent rejection on second reading of the Urban Site Value Rating Bill, that the Council should introduce their Bill dealing with the same subject, and that the Local Government and Taxation Committee be instructed to report upon the various proposals made in the report of the Royal Commission for the relief of the ratepayer with a view to some practical and speedy reforms."

A discussion followed, and the amendment was rejected. The Report was agreed to, with an instruction to the Local Government and Taxation Commitee to report upon the proposals of the minority of the Royal Commission on local taxation.

Foreign Manufactured Tram Rails.—The following adjourned Report of the Highways Committee was then considered :—

"We have considered the tenders (referred by the Council on January 28, 1902) for the supply of about 3,250 tons of track-rails, 1,850 tons of slot-rails, 670 tons of conductor-rails, 125 tons of fish-plates, 155 tons of sole-plates, together with the bolts and nuts and other accessories required in connexion with the reconstruction, for electrical traction, of further portions of the London County Council Tramways. The tenders were as follows :—

	£	s.	d.
P. & W. Maclellan, Ltd., Glasgow—Société Anonyme des Acieries D'Angleur, Tilleur by Liege, Belgium	*41,709	10	10
Bolling & Low, London—Phœnix Works, Ruhrort, Westphalia, Germany	42,897	10	0
Edward Le Bas & Co., London—Ougree Works, Belgium	42,935	0	0
P. & W. Maclellan, Ltd., Glasgow—Barrow Hæmatite Co.'s Works	50,463	15	0
Bolckow, Vaughan, & Co., London—At the company's works	51,188	8	9
Walter Scott, Ltd., Leeds—Leeds Steel Works	52,587	10	0
J. F. J. Pesters & Son, London—At the firm's works (apparently)	58,381	5	0

* Or, with special lock nuts, £41,742 4s. 4d.

Five other tenders were received ; but, as these were not for the whole of the materials to be included in the contract, they have not been considered by us.

It will be observed that the first and third tenders are for rails made in Belgium, and the second for rails made in Germany, while the others are for rails of British manufacture, and that the difference in price between the highest of the first three tenders and the lowest British tender is 7,500*l.*, while the difference between the lowest of the British and foreign tenders respectively amounts to 8,700*l.*, equal to about 18 per cent. We may state that the quantity of rails specified for in the tenders under consideration would, at the rate to be paid under the contract recently entered into for the supply of the rails required for the Tooting, &c., lines, cost about 50,000*l.* ; but in that case it was decided only to accept tenders for rails of British manufacture. The tender of Messrs. P. and W. Maclellan is the lowest, and their proposals as regards times for delivery, namely, 615 tons within fourteen weeks from receipt of order, and 225 tons per week afterwards, are satisfactory ; and we think that their tender for the supply of the rails, &c., with special lock nuts, for the sum of 41,742*l.* 4s. 4d. should be accepted. Should the Council concur with our opinion, it will be necessary for sanction to be given to the employment by Messrs. Maclellan & Co., of the Société Anonyme des Acieries D'Angleur, as subcontractors. Estimates, amounting in all to 644,350*l.*, to cover this and other expenditure on capital account in connexion with the reconstruction of tramways for electrical traction, were approved by the Council on January 28 last ; and we recommend—(*a*) That, subject to the result of the usual inquiries proving satisfactory, the tender of Messrs. P. & W. Maclellan, Limited, be accepted for the supply, for the sum of 41,742*l.* 4s. 4d., of the track-rails, slot-rails, conductor-rails, fish-plates, sole-plates, bolts, nuts, and other accessories, required in connexion with the reconstruction, for electrical traction, of a further portion of the London County Council Tramways ; that the solicitor do prepare, and secure the completion of, a contract to give effect to the tender ; and that the seal of the Council be affixed to such contract when ready. (*b*) That Messrs. P. & W. Maclellan, Limited, be allowed to sub-let to the Société Anonyme des Acieries D'Angleur the manufacture of the track-rails, slot-rails, and conductor-rails, &c., to be supplied under the contract ; that the solicitor do prepare the agreement prescribed by the Council's standing order relative to sub-letting ; and that the seal of the Council be affixed to such agreement when ready."

Mr. Steadman moved an amendment that the Report be referred back for further consideration. He had seen it stated that the reason why the contract would go out of Great Britain was because of the conditions inserted in the Council's contracts with regard to labour, and accordingly the blame was cast on the trades unions. The Labour members had loyally abided by the decision of the Council with regard to labour, but in the contract before them there was no reference to the conditions of labour. He knew he would be charged with advocating Protection by the line he was taking on the matter, but he was a Protectionist to the extent of desiring to protect British labour against the sweated labour of the Continent. He wanted to know what control the Council would have over the contractor and what standard of wages was to be fixed, because the standing orders did not provide for any standard outside Great Britain. On the points of efficiency and economy, he maintained that Belgian steel was not so strong as English, and would be dearer in the long run. Although the Central London Railway Company got its rolling stock from America, yet all the rails were obtained from England, as they were more durable.

Mr. Gaskell seconded the amendment. The Council had laid down rules with regard to the rate of wages, and he failed to see how they could carry out those rules with a foreign tender. They could not raise the condition of British labour unless they protected it against foreign competition.

Sir Algernon West said that while Mr. Steadman had denied that he was a Protectionist, yet he had tried to make out a case for the protection of the British labourer. He entirely dissented from any statement that anything in the shape of Protection was a benefit to the British labourer.

Colonel Rotton said the last speaker had made an appeal to the Council that principles must prevail. But the principles which had hitherto prevailed in the Council were those of putting into all contracts the clause that the wages paid should be the trade union rate of wages obtaining in the district. They could not carry out the principle in a foreign country.

Mr. Benn (Chairman of the Committee) said they were there as trustees of the ratepayers of London, and they regarded it as a first principle that it was their duty to the ratepayers to get the work carried out at the lowest possible price consistent with quality and the maintenance of those conditions which governed the work given out by the Council. Mr. Steadman must see that this was a thing of give and take, and it would be monstrously injudicious to limit their requirements to the narrow range suggested by his hon. friend. The more the tramways cost the less they would be able to do for their employees, and he might say that only about 9 per cent. of the tramway work had gone abroad. The usual conditions would be inserted in the contract, and if they were not carried out the Council would be able to get as effectively at the contractors as if the work was done in England.

A motion to close the debate was put and carried, and the amendment was then rejected on a show of hands. Afterwards the recommendation was agreed to.

Housing.—The following adjourned paragraphs of the Housing of the Working Classes Committee were then considered, and the recommendations were agreed to :—

"Under the London (Burford's-court, &c., Poplar) Improvement Scheme, 1899, it is provided that accommodation for the 269 persons to be displaced by the carrying into effect of the scheme shall be built on the site belonging to the Council at Preston's-road, Poplar. We submit working drawings, specification, and bills of quantities in respect of two blocks of dwellings (Ottawa and Baffin buildings), for the erection of which we propose that tenders should be at once invited. The dwellings will provide accommodation in all for 360 persons, and the balance of ninety-one will be utilised in connexion with further dwellings on the site, as to which we will report fully at a later date. We recommend that the Housing of the Working Classes Committee be authorised to invite tenders for the erection of Ottawa and Baffin buildings, Preston's-road, Poplar, for the accommodation of persons to be displaced by the carrying into effect of the London (Burford's-court, &c., Poplar) Improvement Scheme, 1899.

We have had under consideration alternative sketch plans of the dwellings to be erected by Viscount Portman on the area to be cleared under the London (Nightingale-street, St. Marylebone) Improvement Scheme, 1899. The Council will remember that the Nightingale-street area is being cleared under Part I. of the Housing of the Working Classes Act, 1890, at the expense of Lord Portman. The agreement between Lord Portman and the Council provides for 'the rebuilding to be carried out by Viscount Portman, or his intended lessees, in accordance with a scheme to be jointly approved by Viscount Portman and the Council, and submitted to and approved by the Secretary of State for the Home Department.' Under our instructions the Council's architect has had several interviews with Mr. F. W. Hunt, Viscount Portman's architect, and has offered various suggestions to assist him in the preparation of his plans. Alternative plan No. 1 provides for the accommodation of 580 persons in two five-story blocks, while alternative plan No. 2 provides for the accommodation in similar buildings of 630 persons in forty tenements of one room, 100 tenements of two rooms, and twenty-five tenements of three rooms. The plan submitted is on a small scale, and it is not clear that all the rooms will be of the Council's minimum sizes of 144 square feet for living and 96 square feet

for bedrooms. We are of opinion that alternative plan No. 2 should be approved, subject to the Council's minimum sizes of rooms being maintained and to any necessary approval of the Council under the London Building Acts being subsequently obtained. We recommend that the sketch plan No. 2, submitted by Mr. F. W. Hunt, of the dwellings proposed to be erected by Viscount Portman under the London (Nightingale-street, St. Marylebone) Improvement Scheme, 1899, be approved, subject to the living and bed rooms being in no case less than the Council's minima of 144 and 96 square feet respectively, and subject to any approval necessary under the London Building Acts being subsequently obtained."

The following recommendations of the same committee were also agreed to :—

"(*a*) That the estimate of 5,261*l.* submitted by the Finance Committee in respect of the erection of Sylva-cottages, Mill-lane, Deptford, be approved.

(*b*) That the tender of Mr. H. L. Holloway for the erection of the cottages, amounting to 4,767*l.*, be accepted."

"(*a*) That the estimate of 17,305*l.* submitted by the Finance Committee in respect of the erection of Siddons and Stirling buildings, Russell-court, Drury-lane, be approved.

(*b*) That the tender of Mr. H. L. Holloway for the erection of the buildings, amounting to 15,757*l.*, be accepted."

London University.—The Technical Education Board reported that considerable progress had now been made in the reorganisation of London University, and that it was already having a marked influence for good on the polytechnics and other institutions. The advanced classes in science and engineering were being revised and brought up to a higher standard, gaps in the curriculum were being filled up, and more students were being induced to enter upon systematic courses of study, extending over three or four years, instead of attending isolated classes.

The Widening of Piccadilly.—The Improvements Committee expressed their regret that certain negotiations with the Commissioners of Woods and Forests had proved abortive, and recommended the Council to pass the following resolution :—"That in the absence of any undertaking from his Majesty's Commissioners of Woods and Forests to co-operate with the Council for securing, upon the expiration of the leases, and at a reasonable cost, the setting back of the buildings on the northern side of Piccadilly, the widening of that thoroughfare to 80 ft. between the Circus and Sackville-street be not undertaken by the Council."

The recommendation was adjourned.

District Surveyors' Districts.—The following recommendations of the Building Act Committee were agreed to :—

"(*a*) That an area southward of Avenue Park-road and Thurlow Park-road be added to the district of Lower Norwood, and that the eastern and western limits of that district be also adjusted so as to render such limits identical with the boundaries of the Norwood ward of the Borough of Lambeth.

(*b*) That the limits of the district of Streatham, East, and Brixton be extended by the addition of so much of the district of South Lambeth and part of Camberwell as is situated southward of Acre-lane and westward of Effra-road, so as to include the whole of the Tulse-hill ward of the borough of Lambeth within the area of the first-named district, and that an area southward of Avenue-park-road and Thurlow-park-road be severed from the district of Streatham, East, &c., and added to the district of Lower Norwood, and that the eastern limit of the former district from Leigham-vale southwards to the county boundary be adjusted so as to coincide with the boundary of the borough of Wandsworth at that part.

(*c*) That so much of the district of South Lambeth and part of Camberwell as is contained within the Tulse-hill ward of the Borough of Lambeth be added to the district of Streatham, East, and Brixton; that the western limit of the district of South Lambeth, &c., northward of Acre-lane, be adjusted so as to coincide with the boundary of the Borough of Lambeth at that part; that the eastern limit be adjusted to coincide with the boundary of the same borough at that part; and that the northern limit be extended by the addition to the district (from the district of West Newington, &c.) of so much of the Brixton ward of the borough of Lambeth as is situated southward of Prima-road and Kennington-terrace; that the district as altered be designated South Lambeth, and that an advertisement be issued inviting applications for the appointment of a district surveyor for such district.

(*d*) That the western limit of the district of Camberwell be adjusted so as to coincide with the boundary of the borough of Camberwell at that part.

(*e*) That the eastern limit of the district of Clapham be adjusted so as to coincide with the boundary of the borough of Wandsworth at that part.

(*f*) That the eastern portion of the district of West Newington and part of Lambeth eastward of the borough boundary and southward of the centre line of Newington-butts be added to the district of East Newington and part of St. George-the-Martyr, Southwark; that so much of the district of West Newington, &c., as is contained within the Princes ward of the borough of Lambeth be added to the district of Central Lambeth and North Battersea; that so much of the district of West Newington, &c., as is northward of the borough boundary, and of the centre line of Newington-butts, be added to the district of St. Saviour, Southwark, &c.; and that so much of the district of West Newington, &c., as is contained within the Brixton ward of the borough of Lambeth be added to the district of South Lambeth.

(*g*) That the eastern limit of the district of East Newington and part of St George-the-Martyr, Southwark, be adjusted so as to coincide with the boundary of the borough of Southwark at that part.

(*h*) That the western limit of the district of Bermondsey, St. John, Horsleydown, St. Olave and St. Thomas, Southwark, be adjusted so as to coincide with the boundary of the borough of Bermondsey at that part.

(*i*) That the appointment of Mr. Banister F. Fletcher as interim District Surveyor be terminated on March 31 next; that the District Surveyors, who complete the supervision of works transferred from the supervision of Mr. Fletcher, be required to pay him a proportionate amount of the fees chargeable on such works calculated on the extent to which they have been supervised by him; and that otherwise the alterations of districts do take effect as from the date of the Council's order sanctioning such alterations.

(*j*) That the solicitor be instructed to take such steps as may be necessary to secure the carrying out of the above alterations, which shall be subject to the conditions that any works in progress and any proceedings in progress relating to any dangerous or neglected structure, or any building or structure, in areas surrendered by a district surveyor shall, notwithstanding the transference of those areas from his supervision, continue to be supervised by him until the completion of such works and proceedings, and that no district surveyor shall claim compensation for any diminution of income which may hereafter arise by reason of such adjustments of limits."

The Council adjourned shortly before eight o'clock.

Illustrations.

STUDY FOR THE ARCHITECTURAL TREATMENT OF A BRIDGE.

THIS design formed one of the illustrations to the lecture at Carpenters' Hall on "The Architectural Treatment of Bridges," of which a *résumé* is given in another column.

The treatment of the pier to some extent arises out of that which I proposed for the pier of Vauxhall Bridge, illustrated in the *Builder* of October 5, 1901. It occurred to me that the flat buttress-like projection in the latter design might, as it were, be turned round and set edgeways to the face of the pier, the lamp standard which springs from it being likewise turned round so as to be at right angles to, instead of parallel with, the line of the bridge. Such an arrangement has never, I believe, been carried out, but I think it has a good effect, and is even not without a practical advantage; for while the lights in this position would light the roadway quite as well as in the usual position, the outer lamp would also light the face of the bridge, and define the arch better than when it is left in darkness.

The design serves to illustrate also two points touched upon in the lecture referred to: first, that whatever features follow the raking line of the bridge should be stopped against the piers and not carried round them, the pier being essentially a vertical erection against which the arch-spans and their crowning members abut; second, that where it is desired to mark the parapet and road line strongly, this should not be attempted by the use of the ordinary type of Classic cornice, which is too rigid a feature to be used in such a position, but, as in this case, by something in the nature of a carved frieze.

This design has no reference to any special bridge or any special site, but is merely a study of characteristic architectural treatment.

H. H. STATHAM.

DESIGN FOR A PULPIT.

THIS design for a pulpit, to be executed in marble, obtained for its author, Mr. F. Winton Newman, the 25*l.* prize in the Upper School of Architecture of the Royal Academy, at the close of last year.

It is intended as a pulpit for a large church or cathedral; 6 ft. high to the floor of the pulpit, 9 ft. 8 in. to the top of the book-board; to be approached by a double staircase from two sides, embracing a column of the nave.

The whole of the pulpit up to the top of the book-board is intended to be executed in marble; and all above this height—canopy and supporting pilasters, &c.—to be executed in oak, the large panel beneath the canopy being partially covered with a rich silk hanging.

ST. AIDAN'S VICARAGE, LEEDS.

THIS house was erected at a cost of 2,200*l.*, in a large and rapidly growing parish, consisting of the industrial class.

Owing to the steepness of the site, it was possible to place the entrance-door on a level with the half-pace of the staircase, and to form a separate department for the parish-room, vicar's study, and oratory downstairs, and so to avoid the traffic in connexion with that department entering in any way into the dwelling-house proper, which is situated on the floor above.

The drawing-room and dining-room are separated only by a folding partition, which is usually drawn aside, forming a room some 40 ft. by 16 ft. This arrangement is found useful for various parish functions, and is appreciated in a parish consisting entirely either of small terrace houses or "back-to-backs."

The house is built of Leeds pressed bricks, with Morley stone dressings. The contractors were :—For brick and stone work, Mr. Paul Rhodes; for joiners' work, Messrs. H. Atkinson & Son; for plumbing and painting, Mr. George Thompson; and for tiling, Messrs. Watson & Worsnop. Messrs. Bedford & Kitson, of Leeds, were the architects.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Woolwich—Wood and tile pents over the entrances to eleven houses on the east side and eleven houses on the west side of Admanstock-road, six houses on the north side of Rowton-road, and four houses on the south side of Hinstock-road, Plumstead (Mr. J. Rowland for Mr. Rose).—Consent.

Battersea.†—Rebuilding of Nos. 117 and 119, Plough-road, Battersea (Mr. W. C. Poole for the Dairy Supply Co., Ltd.).—Consent.

Brixton.—A three-story addition to the Stockwell Training College, on the north-east side of Stockwell-road, Brixton (Mr. J. O. Smith for the British and Foreign School Society).—Consent.

Dulwich.—Wood, iron, and glass porches at the entrances to Nos. 45 and 47, South Croxted-road, Dulwich (Mr. W. G. Loe for Mr. J. T. Moss).—Consent.

Fulham.—A porch, with balcony over, at the entrance to the upper stories of a building in course of erection on the south-east side of New King's-road, Fulham, at the corner of Chipstead-street (Mr. R. Groom for Mr. J. Nichols).—Consent.

Hackney, North.—That the application of Mr. G. H. Payne for an extension of the period within which the erection of eight houses, with bay-windows, on the east side of Upper Clapton-road, Hackney, between No. 147 and Moresby-road, was required to be commenced, be granted.—Agreed.

Hammersmith.—Residential flats on the south side of Askew-road, Shepherd's-bush, eastward of Ashchurch-grove (Messrs. Richardson & White for Mr. C. J. Edwards).—Consent.

Hampstead.—A bay-window in front of No. 20, Netherhall Gardens, Hampstead (Mr. F. Pilbeam for Messrs. Kelly Bros.).—Consent.

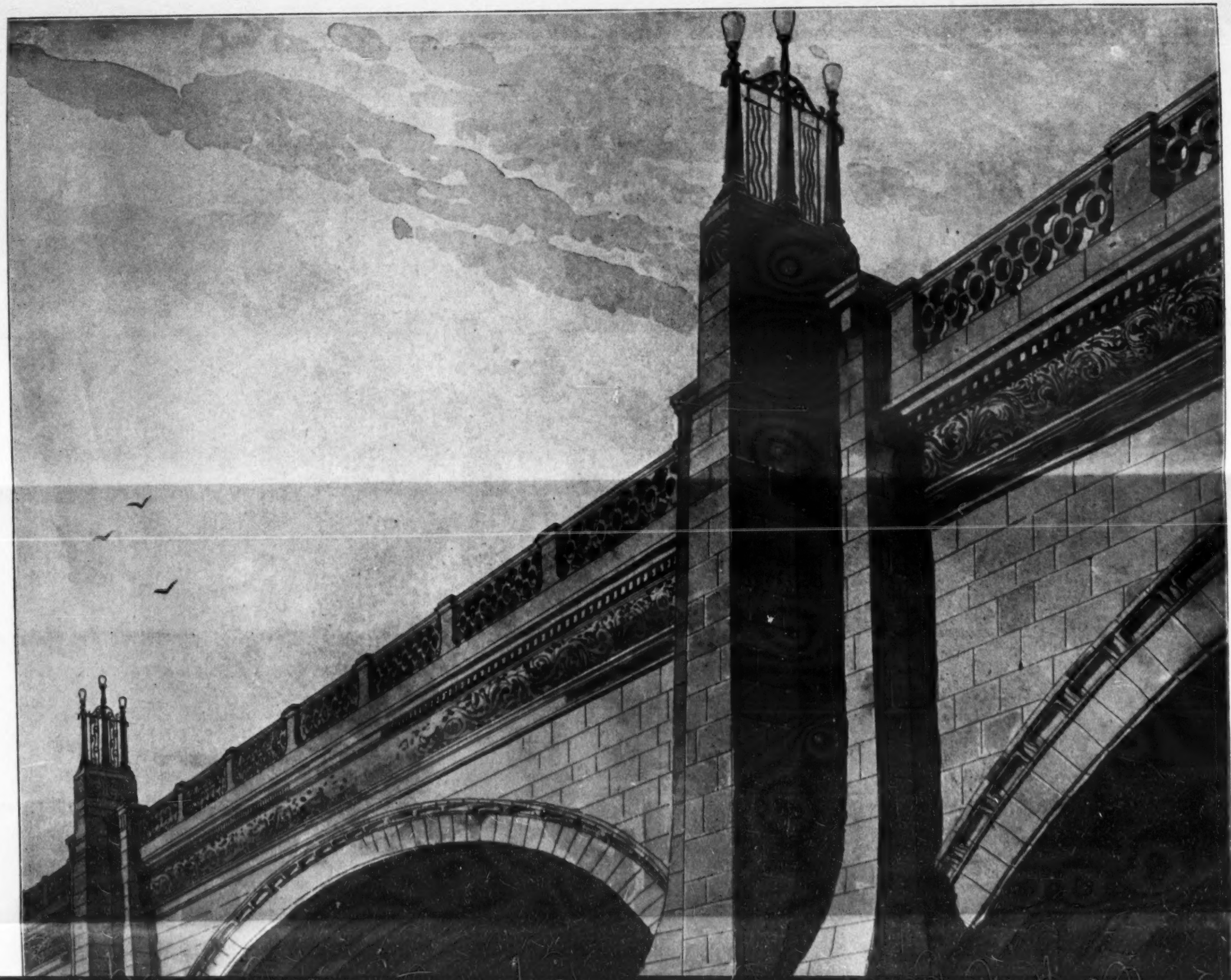
Islington, North.—The retention of a wood and tile porch and verandah in front of Fairwood, Holly Park, Crouch Hill, Islington (Mr. P. E. Gallagher for Messrs. Gilbert & How).—Consent.

Lewisham.†—Two houses, with shops on the ground floor, on the site of Ringstead House, Rushey Green; and the erection of four houses, with shops on the ground floor, on the south side of Ringstead-road (Messrs. Norfolk & Prior for Mr. C. C. Story).—Consent.

Lewisham.—One-story shops on part of the forecourts of Nos. 143, 145, and 147, High-road, Lewisham (Mr. H. Bignold for Mr. H. B. Atkinson).—Consent.

Norwood.—A building, with a projecting porch and tranteps, on the south-east side of Ullswater-

THE BUILDER, MARCH 8, 1902.



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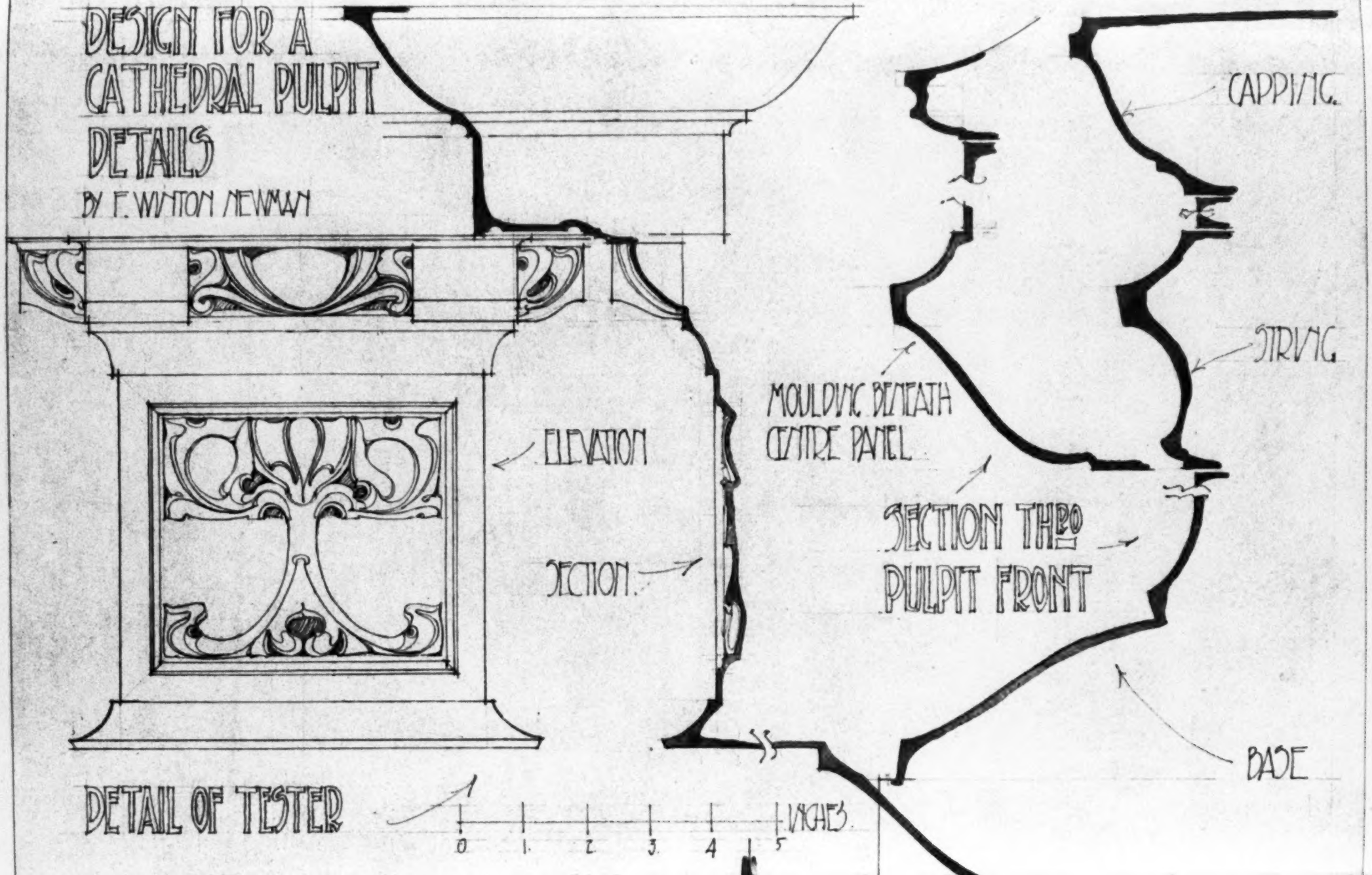
STUDY FOR THE ARCHITECTURAL TREATMENT OF A BRIDGE.—By Mr. H. H. Statham, F.R.I.B.A.

(One of the Illustrations to a Lecture at Carpenters' Hall, on February 27th.)

DESIGN FOR A CATHEDRAL PULPIT DETAILS

BY F. WYNTON NEWMAN



DETAIL OF TESTER

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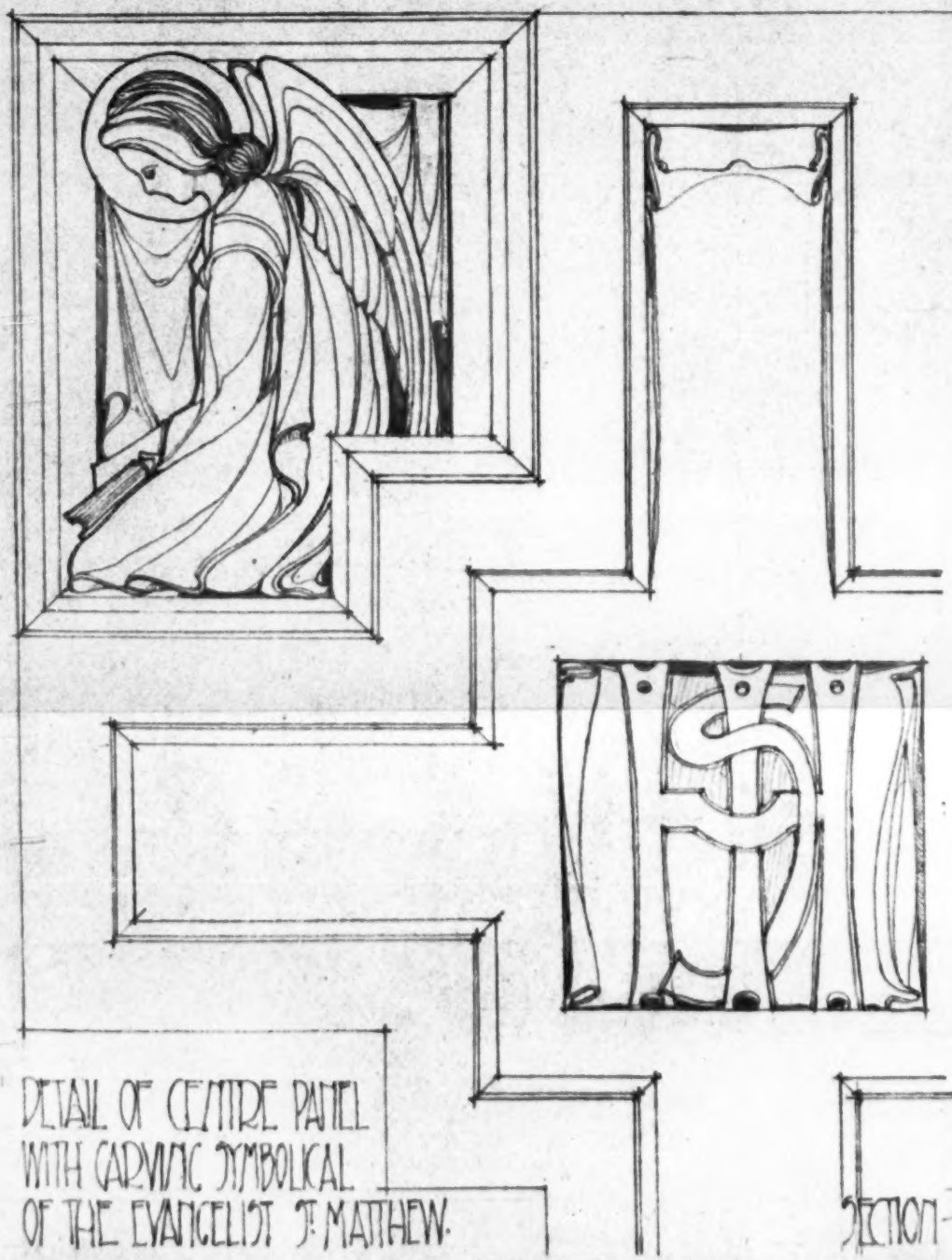
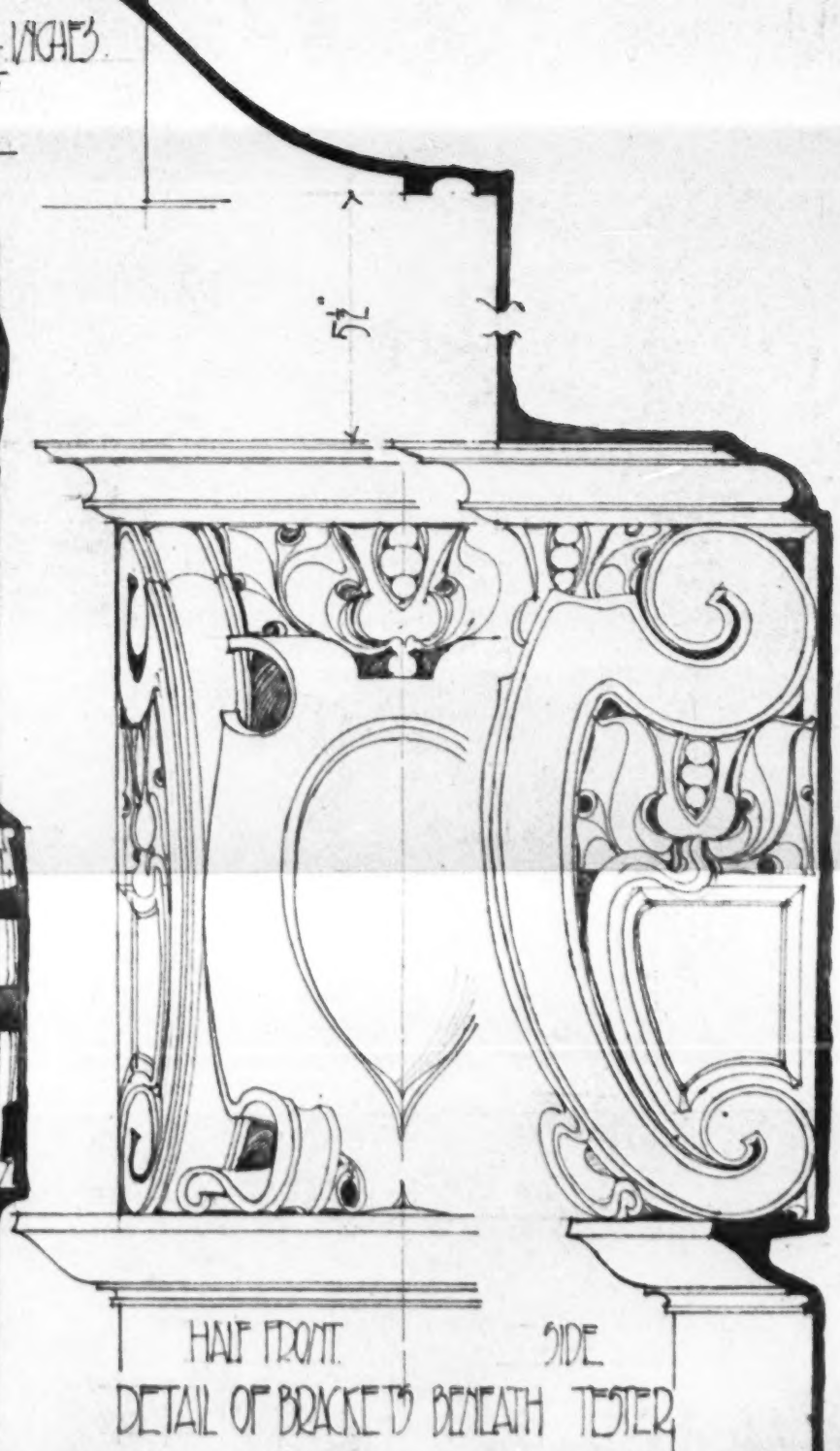


DETAIL OF CENTRE PANEL WITH CARVING SYMBOLICAL OF THE EVANGELIST S: MATTHEW.

SECTION



HALF FRONT SIDE

DETAIL OF BRACKETS BENEATH TESTER

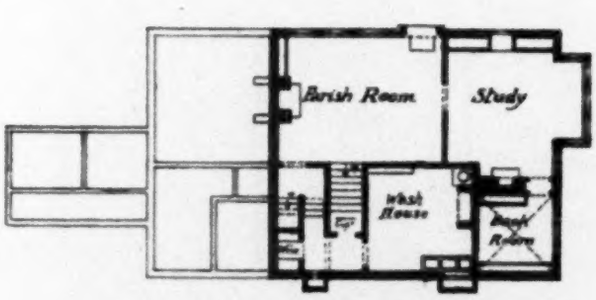
PHOTO-LITH SPRAGUE & CO LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

DESIGN FOR A PULPIT, TO BE EXECUTED IN MARBLE.—By Mr. F. Winton Newman.

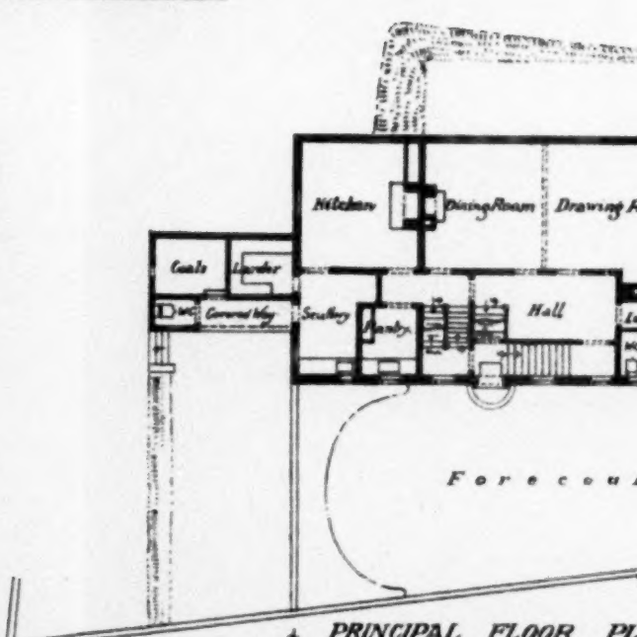
DETAILS.

£25 Prize, Royal Academy Architectural School, 1901.

NORTH ELEVATION



GROUND FLOOR PLAN



PRINCIPAL FLOOR PL

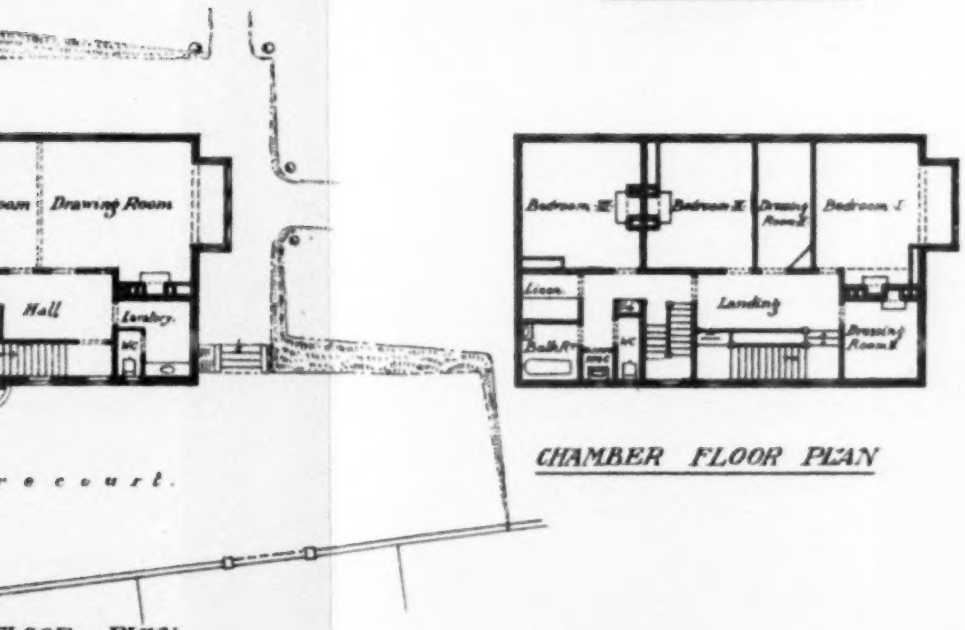
S'AIDANS VICARAGE, LEEDS

BEDFORD & KITSON Architects.

Scale for Plans.

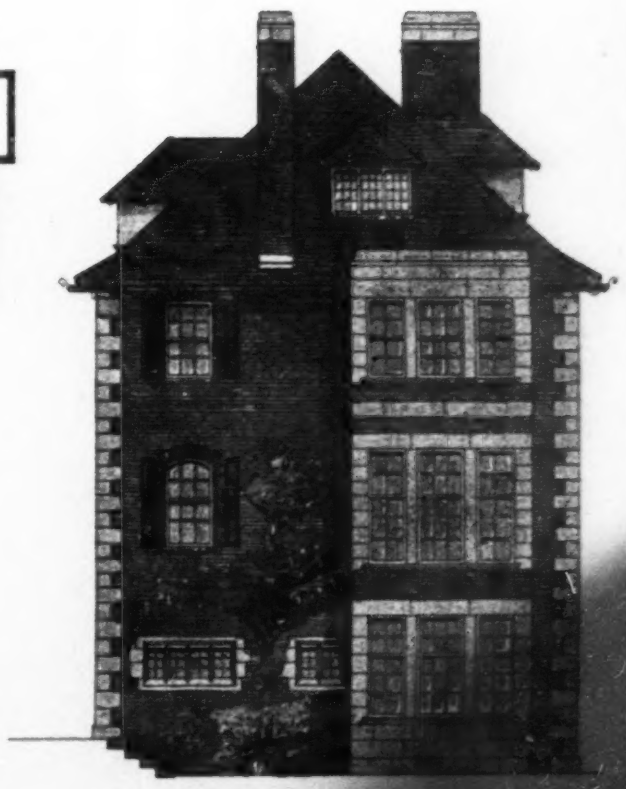
Scale for Elevations

SOUTH ELEVATION



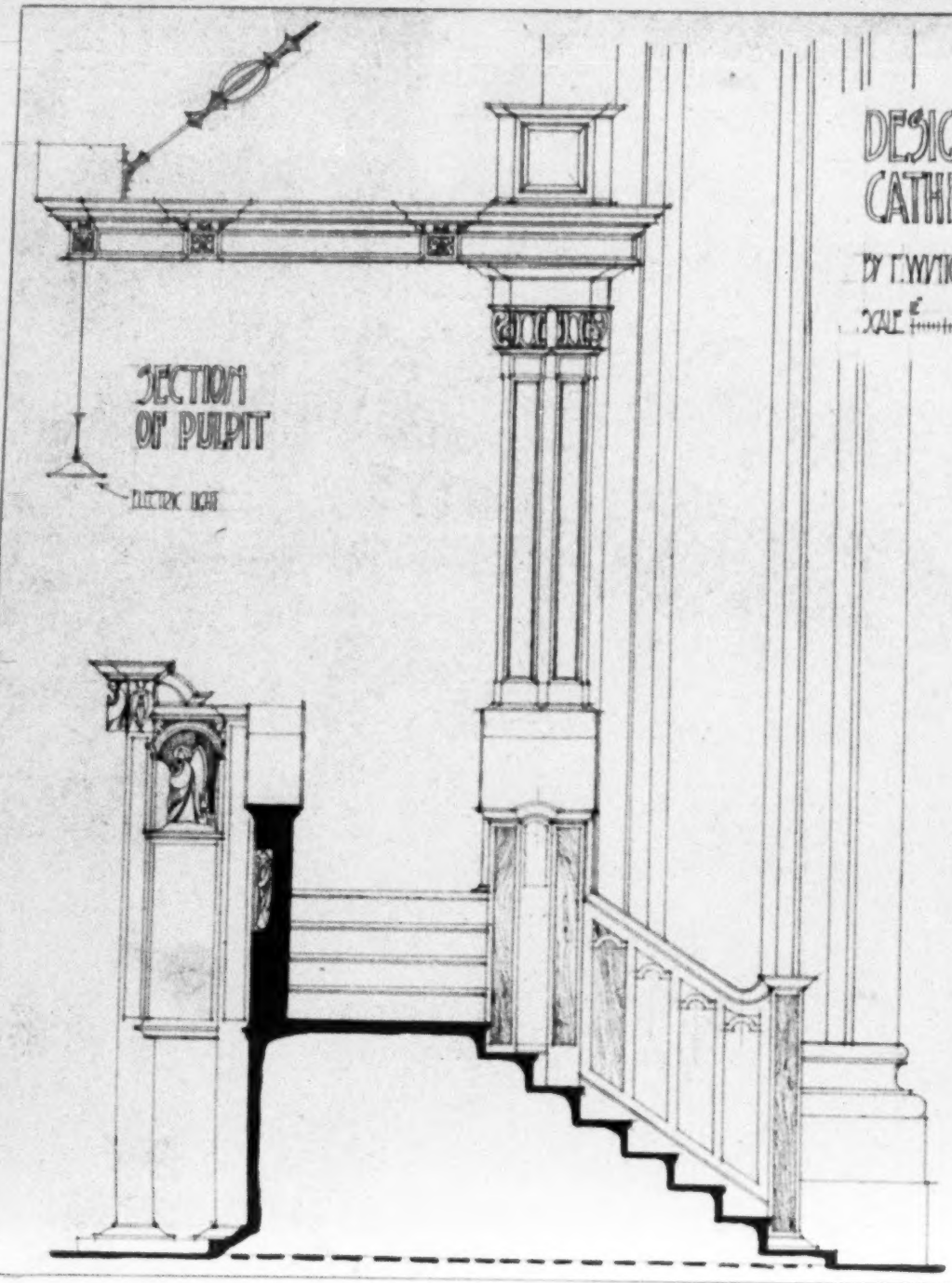
FLOOR PLAN.

CHAMBER FLOOR PLAN



WEST ELEVATION

(W.H. PHOTO. SPRAGUE & Cº LTD. 4 & 5, EAST HARDING STREET, FETTER LANE.)

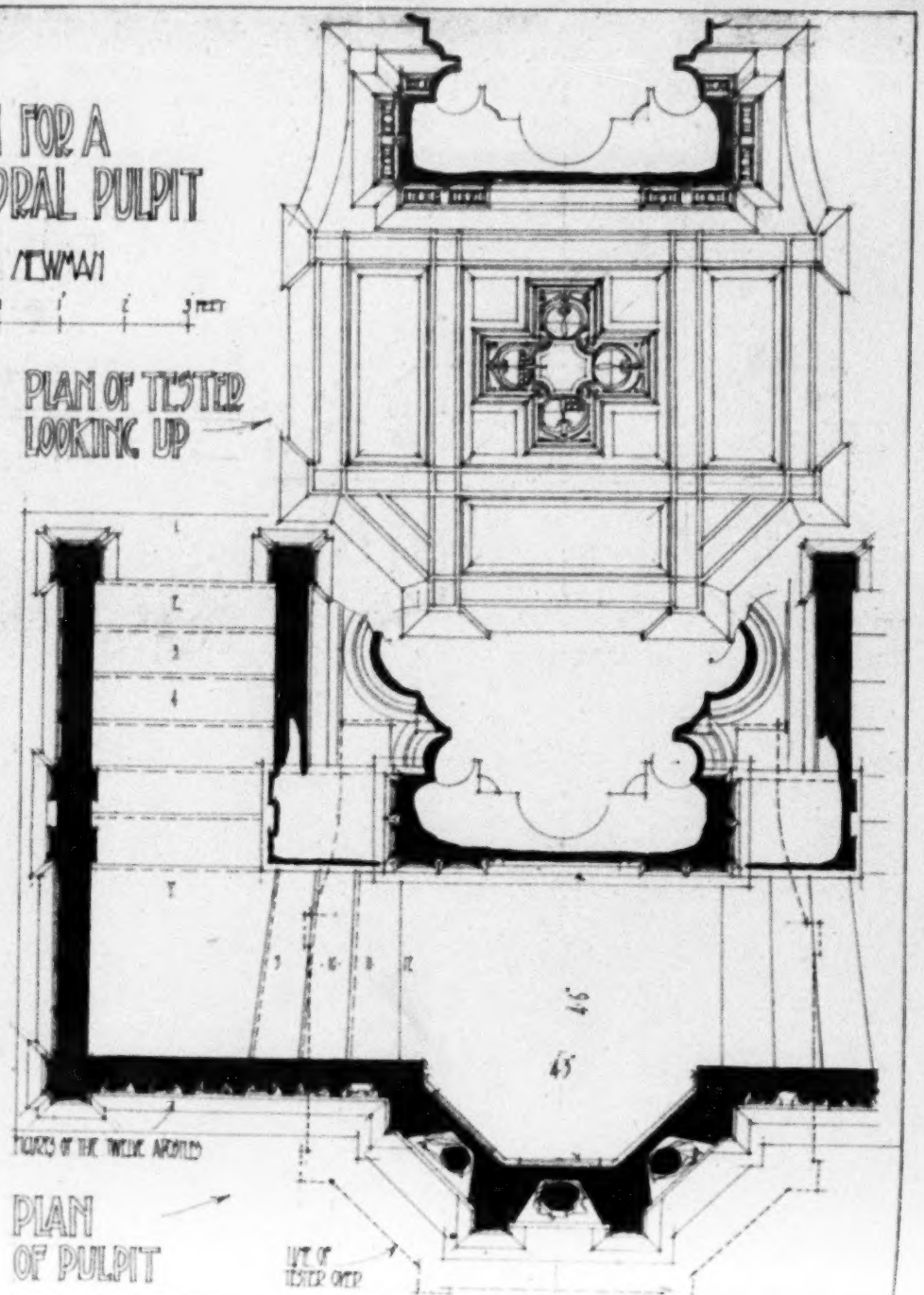


DESIGN FOR A CATHEDRAL PULPIT

BY F. WINTON NEWMAN

SCALE 0 1' 2' 3 FEET

PLAN OF TESTER LOOKING UP



FIGURES OF THE TWELVE APOSTLES

PLAN OF PULPIT

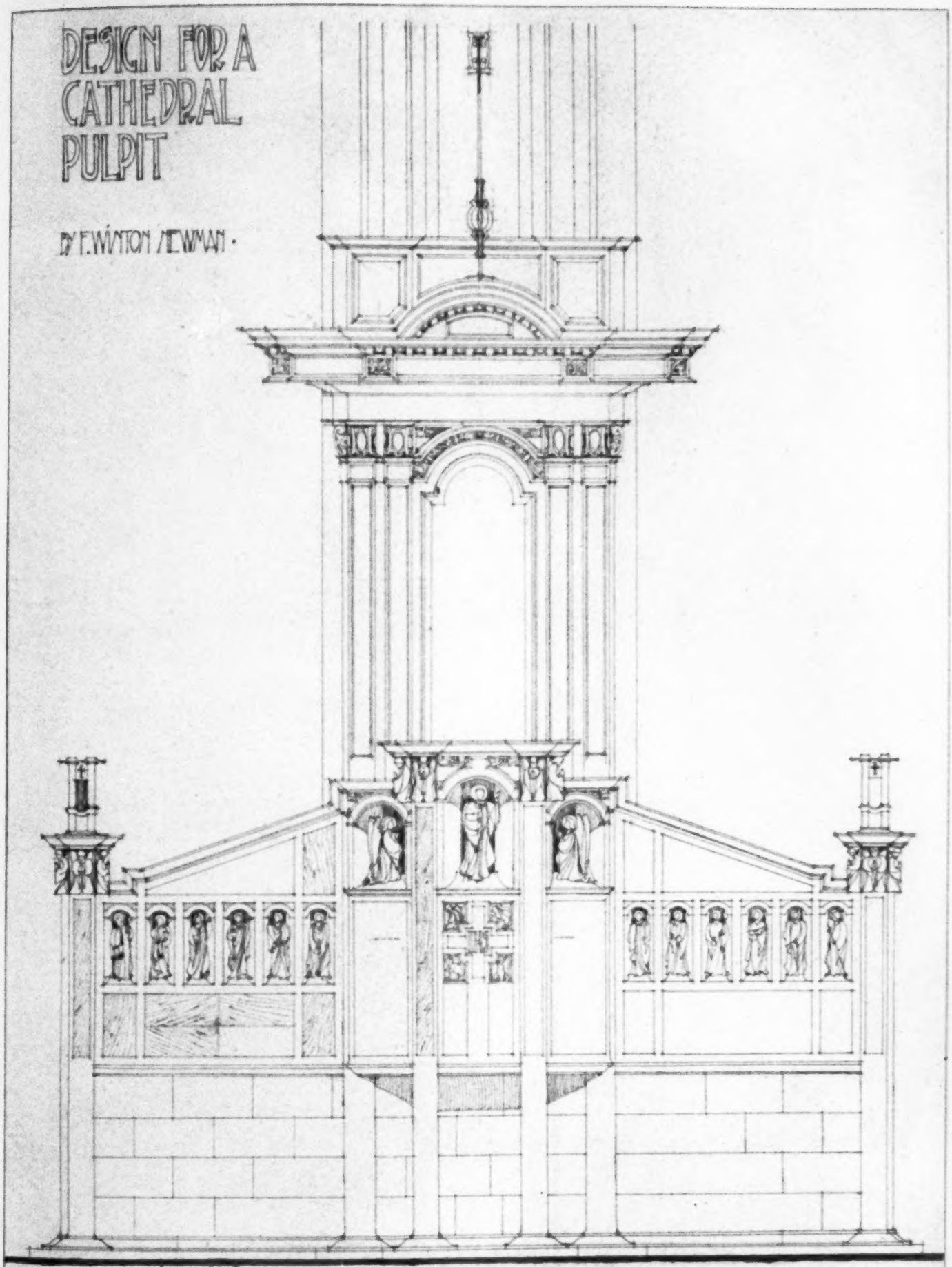
UNDER SIDE OF TESTER OVER

Ass. Prize, Royal Academy Architectural School, 1901. DESIGN FOR A PULPIT, TO BE EXECUTED IN MARBLE.—By Mr. F. Winton Newman.

THE PHOTO-GRAVURE & COLOUR CO., 3 & 5 EAST HARDING STREET, FETTER LANE, E.C.

DESIGN FOR A CATHEDRAL PULPIT

BY F. WINTON NEWMAN.



"IRX-PHOTO" SPRAGUE & CO LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

DESIGN FOR A PULPIT, TO BE EXECUTED IN MARBLE.—By Mr. F. Winton Newman.

£25 Prize, Royal Academy Architectural School, 1901.

road, Norwood-road, Norwood (Mr. J. R. Manning for the Rev. W. F. Gooch).—Consent.

St. George, Hanover-square.—A stone balcony in front of No. 13, Charles-street, Berkeley-square (Mr. R. G. Hammond for Mr. J. Garlick).—Consent.

Wandsworth.—That the application of Messrs. Gibbon & Moore for an extension of the period within which the erection of one-story shops upon part of the forecourts of Nos. 151 to 169 (odd numbers only, inclusive), Balham High-road, Wandsworth, was required to be completed, be granted.—Agreed.

Wandsworth.†—A projecting tower entrance to an extension of the Baptist Church, Lewin-road, Streatham (Messrs. G. Baines & Son for Mr. R. C. Tresidder).—Consent.

Woolwich.—A wood and iron balcony at the first floor level in front of No. 43, West-park, Eltham (Mr. E. J. Gosling for Mr. B. Firminger).—Consent.

Hampstead.—A shop front on part of the forecourt of No. 150, Finchley-road, Hampstead (Messrs. C. Saunders & Son).—Refused.

St. Pancras, West.—One-story shops on part of the forecourts of Nos. 52 to 64 (even numbers only, inclusive), Kentish Town-road, St. Pancras (Mr. W. Batting for Mr. F. H. Rex).—Refused,

Width of Way.

Fulham.—Reconstruction of No. 2, Argon-mews, at the rear of Nos. 581 and 583, Fulham-road, Fulham, with the external walls of such building as reconstructed at less than the prescribed distance from the centre of the roadway of Argon-mews (Mr. A. Sykes for Mr. S. Appleton).—Consent.

Greenwich.—A one-story office building at the Thames Engineering Works, Greenwich, with the external walls of such building at less than the prescribed distance from the centre of the roadway of John Penn-street (Mr. J. W. Ramsay for the Thames Engineering Works).—Consent.

Norwood.—The retention of a stable building with the external walls of the water-closet attached thereto and the forecourt walls at less than the prescribed distance from the centre of the roadway of Knight's Hill-mews, West Norwood (Mr. F. G. Baxendale for Mr. R. W. Heyward).—Consent.

St. George-in-the-East.—A building on the north side of Great Hermitage-street, Wapping, with the external walls of such building at less than the prescribed distance from the centre of the roadways of Great Hermitage-street and of a passageway leading northward out of that street (Mr. J. Parrish for Mr. A. W. Birt).—Refused.

St. Pancras, West.—A warehouse building on the south-west side of Pleasant-row, High-street, Camden Town, with the boundary of the forecourt at less than the prescribed distance from the centre of the roadway of the street (Mr. L. V. Hunt for Mr. T. J. Brinsmead).—Refused.

Formation of Streets.

Rotherhithe.—(*a*) That the resolution, reported to the Council on January 21, 1902, with reference to the widening of Paradise-street, Rotherhithe-street, Fulford-street, and Seven Step-alley, and the formation or laying out for carriage traffic of a continuation of Seven Step-alley, be varied. (*b*) That an order be issued to Mr. R. J. Angel, sanctioning the widening of Paradise-street, Rotherhithe-street, Fulford-street, and Seven Step-alley, Rotherhithe, and the formation or laying-out of a continuation of Seven Step-alley for carriage traffic, in connexion with the erection of blocks of artisan dwellings . . . . for the Metropolitan Borough of Bermondsey . . . . .—Consent.

St. Pancras, South.—That an order be issued to Mr. C. Barrett sanctioning the formation or laying out of a new street for carriage traffic to lead from Burton-street to Mabledon-place, Euston-road, St. Pancras (for the Metropolitan Borough of St. Pancras). That the name Burton-street (in continuation) be approved for the new street.—Agreed.

Space at Rear.

St. Pancras, South.—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of blocks of dwelling-houses to be inhabited by persons of the working class on the eastern side of a street proposed to be formed in continuation of Burton-street, Crescent-place, St. Pancras (Mr. C. Barrett for the Council of the Metropolitan Borough of St. Pancras).—Consent.

Width of Way, Lines of Frontage and Projections.

St. Pancras, East.—Steel and glass shelters over the entrances to the Camden Theatre, to overhang the public way of Crowndale-road and Bayham-place, St. Pancras (Mr. W. G. R. Sprague for the Camden Theatre, Limited).—Consent.

Marylebone, West.—The retention of a wood and glass covered-way in front of No. 13, Elm-tree-road, St. John's Wood (Mr. W. H. Newton-Mason for Mr. G. Aylwin).—Consent.

Deviations from Certified Plan.

Southwark, West.—Deviations from the plan certified by the District Surveyor, under Sections 13 and 43 of the Act, so far as relates to the proposed rebuilding of the Noah's Ark public-house, on the north-west side of Park-street, Southwark, at the corner of Noah's Ark-alley (Mr. A. Dixon for Messrs. Whitbread & Co., Ltd.).—Consent.

Width of Way and Space at Rear.

St. Pancras, South.—A block of dwelling-houses, to be inhabited by persons of the working class, on the north-west side of Prospect-terrace, Gray's Inn-road, St. Pancras, with the external walls of such dwelling-houses and the forecourt fence at less than the prescribed distance from the centres of Prospect-terrace and Wellington-place (Mr. C. Barrett for the Council of the Metropolitan Borough of St. Pancras).—Consent.

**** *The recommendations marked † are contrary to the views of the local authorities.*

Correspondence.

COMPETITIONS.

SIR,—A friend of mine (not an architect) has suggested to me that the unfortunate results of setting aside an assessor's award in architectural competitions, such as that to which Mr. Hare and Messrs. Lanchester, Stewart, and Rickards refer in your last issue, might to some extent be minimised if assessors, and particularly members of the Royal Institute of British Architects, would agree, by common consent, not to act as assessors unless an undertaking was given that their award would be maintained, and that the designer of the first premiated drawings was given the work to carry out.

FRANK FOSTER.

*** With the first of Mr. Foster's recommendations we agree entirely. The second we think is pushing the matter further than the public will be likely to accept. It would be wiser to confine it to asking for an undertaking that one of the premiated architects should be employed to carry out the building. No doubt, where the assessor is a competent man who has given full attention to the designs, the promoters will in most cases be wise, and will be doing the best for themselves, if they select the architect to whom the assessor has awarded the first premium. But it can hardly be expected that those who are to pay for and use the building should be asked to give up all private judgment in the matter. If it is pushed to that point the public will rebel. The awards should certainly be upheld; but beyond that it is hardly reasonable to demand more than that one of the premiated architects (there are usually three) should be employed. The promoters may have reasons for thinking, for instance, that the second premiated design will suit their purposes better than the first; and they *may* be right in thinking so. Assessors are, after all, human, and are not infallible.—ED.

COST OF ISOLATION HOSPITAL, RICHMOND.

SIR,—In the month of July, 1896, you drew attention to the low estimate of the Richmond Town Council and the Heston and Isleworth Urban Council in inviting competition designs, viz., 9,000*l.* for forty beds at the joint hospital at Mogden. Indeed, you mentioned that it was little more than half the necessary amount.

One of our local papers (the *Richmond and Twickenham Times*), in commenting on the above, wrote: "No doubt the *Builder* is conducted so much in the interests of the architects that some little discount may be allowed for this in arriving at the value of our contemporary's opinion." (!)

The accompanying letter, compiled from the official returns of Heston and Richmond, will show how just your conclusions were; the cost of the building and furnishing of the hospital for the joint districts being a fraction under 20,000*l.*; Richmond's loan debt for building and furnishing alone amounting to 13,000*l.*

J. COCKRAM.

*** Our correspondent encloses a letter bearing mainly on the division of expenses between Richmond and Heston, which does not specially concern us; but it shows the total cost to have been, as we said, about double what was estimated by the promoters of the competition, and is an amusing comment on the sarcasm of the local paper referred to. How one is supposed to be acting "in the interests of architects" by telling people the truth as to what their building will cost them, it is not easy to understand.—ED.

GASOMETERS AND LIGHT AND AIR RIGHTS.

SIR,—Could any reader kindly favour me with their opinion or give the name of any recent law decision relating to a similar case to the following:—

There is a street in a country town, 30 ft. wide, which is a *cul de sac*; at the end are three houses on each side, which have been built twenty years. Recently a corporation have erected a gasometer in open garden ground at the end of the street and at a distance of 39 ft. and 26 ft. respectively from each corner of the end houses. The gasometer is 90 ft. diameter and 60 ft. high, being 56 ft. higher than the glass line to ground floor bay windows. The gasometer is placed east of the property and prevents the enjoyment of a great amount of sunlight and ordinary daylight, besides being a great detriment to the value of the property. The tenants of the houses are now asking for a reduction of their rents since the gasometer was completed.

I shall be greatly obliged for any information to guide me in preserving my rights enjoyed in the property.

A COUNTRY SUBSCRIBER.

BUILDERS' ACCOUNTS.

SIR,—I noted with pleasure Mr. Thos. E. Brown's able letter on the above subject in your issue of the 22nd ult. There are, however, one or two points in it that I should like to refer to.

Mr. Brown—referring to cost books—thinks the most satisfactory system he has had experience of would not commend itself to me. I quite agree with him, and for this reason, the cost books Mr. Brown mentions are, he says, not balanced with the ordinary books of account. Why not? They could be balanced and their accuracy verified to a halfpenny with very slight manipulation.

Again, Mr. Brown accuses me of not going sufficiently into "detail cost," and apparently from his letter is a strong believer in very minute costing. Yet, if so strong on costing, why does he suggest, later on in his letter, that detail on general costs "can be abandoned under pressure or by small builders." If they can be abandoned, why keep cost accounts at all?

For all this I quite agree with Mr. Brown as to his general remarks on "detail costs." The builder who will go into detail on the various items of work and see what each fraction of the whole is costing him, and at the same time keep an eye on the price he fixed for same in his tender, will find the additional expense thereby incurred more than recouped.

Perhaps I might have gone more into detail costs in my book, but Mr. Brown must consider the difficulties I work under. I had to keep in view that this book would come into the hands of all kinds of builders—large, small, and medium-sized. I had to adapt myself to the position. I think Mr. Brown will agree with me when I say that very few builders go into costing as he is evidently in the habit of doing. Again, I think that anyone who has read and understood my book will be able to go into as much further detail costing as he wishes.

There is one other small matter I should like to draw attention to. Mr. Brown thinks the plant journal and ledger should never be dispensed with. The writer of the review of my book (see your issue of 1st ult.) is of the contrary opinion.

JOHN A. WALBANK, A.C.A.

The Student's Column.

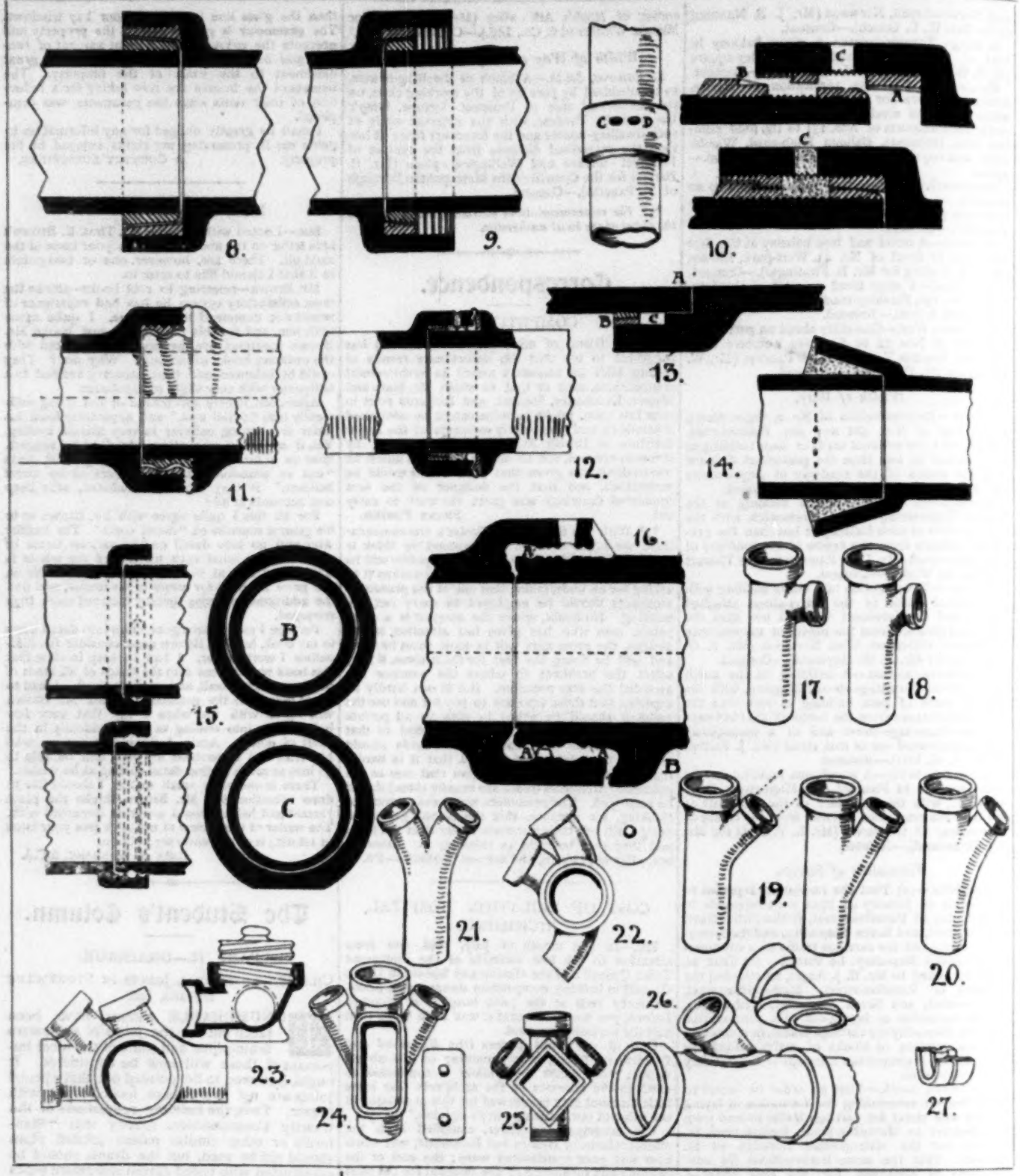
PART II.—DRAINAGE.

CHAPTER 9.—SPECIAL JOINTS IN STONEWARE DRAINS, &c.

INNUMERABLE patents have been taken out for the joints of stoneware drain-pipes, and some of the most important of these will now be considered. It ought, however, to be pointed out that special joints are not everywhere looked upon with favour. Thus, the building regulations of the Charity Commissioners specify that "Stanford's or other similar patent jointed pipes should not be used, but the drains should be constructed with tested glazed stoneware pipes with socket joints in cement."

The Stanford Joint (fig. 8) is one of the best-known of the special joints, and is now made by nearly every manufacturer of drain-pipes. It is an ordinary socket joint with rings (composed of ground earthenware or sand, sulphur, and tar) cast in the sockets and around the spigots. The surfaces of the rings are first tarred or greased, and the spigot is then placed in the socket and slightly turned to bring the surfaces close together. The rings ensure a true alignment of the pipes, and the joint is completed with cement in the usual way. An improved form of this joint (fig. 9) has a deeper socket with ample space for cement. The cost of these pipes is about 50 per cent. in excess of ordinary pipes.

Doulton's "Self-adjusting" Joint is on the same general lines as the Stanford, but the surface of the spigot-ring is more convex so as to allow a slight lateral or vertical adjustment in the line of the pipes. The makers supply a special lubricant for use with this joint. The socket and spigot rings must first be wiped clean, and the lubricant must be slightly warmed and applied evenly over the rings with a brush. The makers claim that the laying of these pipes is simplicity itself—"the



spigot of one having been inserted into the socket of another, the joint is complete, no cement being required." In practice, however, such joints are now generally finished with a ring of cement bevelled off as shown in fig. 7.

Hassall's Single-lined and Double-lined Joints contain somewhat similar composition rings, but additional security is given by means of cement. The single-lined joint is really a Stanford joint with deeper socket, as already illustrated in fig. 9. The double-lined joint (fig. 10) has double composition rings and collars with a space between. A special plastic cement, supplied by the makers of the pipes, is spread on the inner ring A and the outer collar B, and the spigot is then inserted into the socket and pushed home. Liquid cement grout is afterwards poured into the hole at C, in the top of the socket, till it overflows through the hole D. The space E, between the composition rings, is thus filled with cement, and the joint is complete. The pipes are more quickly laid than ordinary socket-pipes, and less cement is required, while at the same time the joint is made perfectly watertight and true alignment of the pipes is secured.

Button's "secure" joint is on similar lines, but the composition rings are keyed into the pipes, and the space left for the cement is formed into a double dovetail by shaping the opposite return faces of the rings.

Sykes's patent joint (fig. 11) has a composition collar of screw shape formed on the spigot, and a composition ring of corresponding shape in the socket. A shoulder is formed on the spigot, and this is covered with plastic composition, which, when the pipe is screwed home, is compressed between the rim of the socket and the shoulder. For heavy pipes special chain tongs must be used to screw the pipes tight. This joint is suitable for straight lengths of drains and sewers, but is not applicable to all the details of house drainage. The only way of obviating the difficulties connected with screwed pipes would seem to be by means of union-pipes with right threads at one end and left at the other, but these do not appear to be made.

Sykes's "new patent" joint has a similar collar on the spigot-pipe, but no screw. The joint (fig. 12) is a modification of the double-lined joint already described. It has the composition collar around the end of the spigot and the corresponding ring in the bottom of the socket. In laying the pipes the ring in the socket is thoroughly covered with grease, and a band of clay or plastic composition is laid on the composition face of the spigot-collar. The spigot is then placed in the socket, and the pipe forced home, either by a crowbar applied at the other end, or by placing a piece of wood across this end, and tapping it with a hammer. The annular space is afterwards filled with cement grout, inlet and overflow holes being formed in the socket as in Hassall's double-lined pipe. The grouting is generally commenced when about a dozen pipes have been laid, and this interval is maintained until the last pipe of the length is in position.

The special joints which have hitherto been considered have composition rings introduced, partly for the purpose of securing true alignment of the pipes. The same object can be attained in other ways. In Green's "Truinvert" pipe (fig. 13) the inner portion A of the socket is of the same diameter as the exterior of the spigot, and a Stanford joint B is formed at the outer end of the socket. In laying the pipes, the inner portion of the socket is brushed over with a waterproof composition supplied

by the makers of the pipes, and the spigot of the next pipe is then inserted and pushed home; the annular space C is afterwards grouted with cement.

In many special joints composition rings are omitted altogether, and true alignment is secured in other ways. Peddie's drain-pipe (fig. 14) is one of the simplest. The sockets are made to diminish from the mouth inwards, the diameter at the shoulder being equal to the external diameter of the spigot. The sockets are large, those for 4-in. pipes being 3 in. deep, 7¼ in. in diameter (inside) at the mouth, and 5⅞ in. at the bottom. The size of the annular space allows a good cement joint to be formed, and as the pipes are made in 3-ft. lengths, the labour of laying is considerably reduced. The sockets are not adapted to bear the weight of the pipes and filling material, and holes must therefore be cut in the bottom of the trench to receive them, so that the weight will be entirely borne by the barrels of the pipes.

The patent "Paragon" pipe (fig. 15) has the socket placed eccentric with the barrel of the pipe. A flat base is formed under the socket, and the trademark is stamped on the crown, so that it can be seen at a glance whether the pipes are correctly laid or not. The shoulder at the invert of the socket is equal to the thickness of the wall of the spigot-pipe, but grooves are formed to receive the cement used in making the joint. The shoulder at the crown is much larger, so that a space is left for the cement between the socket and spigot. These pipes are made in three patterns, known as A, B, and C. Pattern B, with deep socket (fig. 15), is that most commonly used. Pattern A is similar, but with the socket of ordinary depth. In these pipes the main groove for cement is carried around the lower half of the socket only. In pattern C the socket is still deeper, and the groove is continued entirely around it, while a corresponding groove is formed around the spigot, thus ensuring a safer joint. These pipes are made in sizes (rising by 1 in.) from 2 in. to 10 in. in diameter, and (rising by 3 in.) from 12 in. to 24 in. Pipes 6 in. in diameter and upwards are made in lengths up to 3 ft.; the smaller sizes are in 2-ft. lengths.

Ames & Crosta's "single-seal" and "double-seal" joints (fig. 16) have the sockets concentric with the pipes, but studs are formed in the sockets to receive the spigots and preserve true alignment. The shoulder of the socket is of a special shape, and affords an excellent key for the cement. In laying the single-seal pipes, a fillet of plastic cement is laid around the bottom of the socket to the dotted lines A, and the spigot is pushed home. The outside of the annular space is then pointed, and the joint completed by pouring cement grout through the hole provided for the purpose; or the annular space may be entirely filled with cement mortar in the ordinary way. The double-seal joint has a collar around the spigot, as shown at B, and in laying the pipes a fillet of cement must be laid around this collar and another around the bottom of the socket, and the space between must be grouted with cement.

Hutchinson's pipe has an inner socket of oval shape for receiving the spigot and preserving true alignment, the outer socket being concentric with the pipe, and providing the usual annular space for the cement mortar. In Wakefield's pipe two corrugated webs, with a space between, are formed in the lower half of the socket, and the spigot rests on the crowns of the corrugations. Pipes of these kinds can, of course, be laid only in one position if their special features are to be of any use.

Drain-pipes have been made without sockets, the joints being formed by means of loose collars or saddles; but as such pipes require more labour and cement in laying, and are more difficult to make watertight at the joints, they are now seldom used. The new Drainage By-laws of the London County Council expressly state that stoneware pipes must be "jointed with socket joints." The Model (Urban) By-laws specify "watertight socketed or other suitable joints."

Junctions.—Drain-pipe junctions are not now used as generally as in former days. In the best work all important branch drains are now carried separately to junction-chambers, and very few junction-pipes are required where this arrangement is adopted. The worst form of junction is that known as the square (fig. 17); the sewage from the branch meets the sewage in the main at right angles, and thus checks the flow and often causes deposits. Such junctions are prohibited in many districts. The new London by-law on the subject runs as follows:—"A person who shall erect a new building shall not construct the several drains of such building communicating with a sewer in such manner as to form in such drains any right-angled junction, either vertical or horizontal. He shall cause every such branch drain or tributary drain to join another drain obliquely in the direction of the flow of such drain and as near as practicable to the invert thereof."

The "curved square" junction (fig. 18) is very little better than the true square, and ought not to be used. Oblique junctions (fig. 19) are made of various angles, the most common being 45 deg. and 30 deg. Curved oblique junctions (fig. 20) are also made, and are theoretically the best. The "breeches" or "Y" junction (fig. 21) is a good form, especially if made with an inspection eye. Junction bends (fig. 22) may prove useful in special cases; that shown in the illustration is provided with a socket for receiving an inspection stopper or pipe. The junctions illustrated in figs. 17 to 20 are known as "single"; "double" junctions are made of similar forms, but with a branch on each side of the main; the "Y" junction is sold as a double junction.

As already stated, special junction-chambers are now often constructed. The bottoms of these are generally formed with a main channel and as many branch channels as there are branch drains entering the chambers. Instead of the channels, closed pipes are now sometimes used, and the junctions are provided with inspection sockets and stoppers, such as that illustrated in fig. 22. Sykes's access pipes are specially made for this purpose in a variety of forms. We illustrate one form with two left-hand branches in fig. 23. The pipe is 6 in. in diameter, the branches 4 in., and the access eye 9 in.; the latter is fitted with a screw stopper, the threads on the stopper and in the socket being formed of a special composition, after the manner of Sykes's drain-pipe joint. This access eye ought to be of large size, so that clearing rods can be passed through it into the drain if required.

Access junctions are also made with oblong openings for inspection, as shown in fig. 24. Armstrong's inspection openings are square, and are made with 4 in., 5 in., 6 in., and 9 in. outlets, and with one, two, three, or four inlets in each case. In some of the designs one or more of the inlets are at right angles to the main pipe, and are therefore unsatisfactory. A good design with three inlets is shown in fig. 25. The access eyes range from 9 in. to 12 in. square, and special pipes, square at the bottom and circular at the top, are made to fit the eyes; above these ordinary drain-pipes can be continued up to the surface of the ground.

When new drains have to be connected to existing pipe drains or sewers, ordinary junction-pipes cannot, of course, be inserted. The simplest method is to cut a hole in the side of the existing pipe, and insert a saddle junction, as shown in fig. 26. The saddle ought to be bedded in neat cement and entirely surrounded with concrete in order that it may be kept firmly in position and the joint be watertight. The saddle shown is oblique; "square" saddles can also be obtained, but ought never to be used. The flange of the saddle must have the same curve as the exterior of the pipe to which it is fitted. Another method consists in cutting out one pipe in the main drain or sewer, and inserting a socketless junction-pipe of the necessary length. The joint between the lower end of the junction-pipe and the socket of the existing drain can be made with cement in the usual way, and the joint at the other end by means of two half double sockets or collars of the kind shown in fig. 27, made watertight with cement. This joint ought also to be entirely surrounded with concrete.

Junctions with brick sewers must be made with junction-blocks, the inner face having the same radius as the sewer. An oblique block of this kind is shown in fig. 28. The blocks are made to fit either 4½-in. or 9-in. brickwork.

TELEPHONE NUMBERS.—Messrs. Finch & Co., Lambeth, send us a large card containing an alphabetical list of telephone numbers of architects and builders in London, mounted so as to be hung up for reference. The architects' names are placed on one face of the card and those of the builders on the other face.

BOOKS RECEIVED.

THE LAND AND HOUSE PROPERTY YEAR BOOK FOR 1901. (*Estates Gazette* Office.)

THE SEA-COAST; DESTRUCTION; LITTORAL DRIFT; PROTECTION. By W. H. Wheeler, M.Inst.C.E. (Longmans.)

ANNUAL RECORD OF THE LONDON TOPOGRAPHICAL SOCIETY. Edited by T. Fauman Ordish, F.S.A. (Published by the Society.)

OBITUARY.

MR. BENTLEY.—We deeply regret to announce the death, on Sunday last, at his residence, Clapham Common, of Mr. John Francis Bentley, in his sixty-third year. Mr. Bentley, unfortunately, has not lived to see the completion of his most important architectural work, the Roman Catholic Cathedral at Westminster, or to receive the Royal Gold Medal for which he was nominated at a meeting of the Royal Institute of British Architects held on February 3 last. The cathedral is now being erected upon a site which formed part of the ground occupied by the later Tothill Fields, Bridewell, which in recent years had been used as a women's prison. The land, covering about 4½ acres, was acquired by the late Cardinal Manning, and the first stone of the new fabric was laid by Cardinal Vaughan on July 1, 1895. The plan and design—of which descriptive accounts are given in our columns of July 6, 1895, February 25, 1899, and June 23, 1900—are based, in parts, upon those of Constantine's church of St. Peter at Rome, and, as we understand, the architect was given a free hand in their choice and preparation, upon which he bestowed great thought and labour. He passed many months in Rome, Ravenna, and other Italian cities making a special study of (old) St. Peter's at Rome, and of the early "Basilica" churches; but being more deeply impressed with, for his purpose, the cathedral at Murano, St. Mark's, Venice; St. Vitalis, Ravenna; and St. Ambrogio, at Milan; he obtained Cardinal Vaughan's consent, most wisely accorded, to a relinquishment of the initial idea for a church of the former type. Mr. Bentley, who was born in 1839 (not 1840, as has been erroneously stated), began his professional studies as a pupil of Henry Clutton: and his work for the most part has been associated with Roman Catholic churches, seminaries, and other kindred institutions. We will first mention some of the principal buildings of that class of which he was the architect, viz.: the church and convent of the Immaculate Conception and of St. Francis, at Bocking Bridge, Essex, built of stone and red brick, after the early decorated style, which was opened in May, 1899; the churches of the Holy Rood, at Watford, a gift of Mr. S. Taprell Holland, of Otterspool, Watford, begun in 1887, and completed and consecrated in July, 1900; Corpus Christi, Brixton; St. Mary, at Kensal Green; and the Redemption with a monastery, at Clapham; also Beaumont College (now a Catholic college conducted by Jesuit priests) with the chapel of St. Stanislaus, Old Windsor; and St. Thomas's Seminary, Hammersmith. Mr. Bentley was the architect for the completion, fittings, and decorations of the Church of St. Francis, at Notting Hill, and for the Clergy House Church and Schools, some years later; of additions to the Church of St. Mary of the Angels, Bayswater; and prepared the designs for a scheme of decoration for the interior of St. Anne's new Roman Catholic Cathedral at Leeds, as illustrated in our columns of March 9 and May 18, 1901, Mr. J. H. Eastwood being the architect of the building. Other buildings by him are Carlton Towers, Yorkshire (completion of interior fittings and decoration); screen and organ-case, St. Etheldreda, Ely-place, Holborn; church in Cadogan-place, Chelsea; turret and spire to Convent Chapel, Portobello-road, Notting-hill; altars and decoration of Spanish Church, Manchester-square; Cardinal Vaughan's House, Westminster. On May 11, 1895, we published an illustration of the silver casket, executed by Mr. Thomas Elsley, after a beautiful and original design by Mr. Bentley, for containing an address which was presented to the late Sir Stuart Knill by a number of his Catholic friends on the occasion of his retirement from the office of Lord Mayor of London. Other examples of decorative design by him will be seen in the mosaics he prepared with his own hands for the Cathedral at Westminster, and in the painting and decoration of the interior of St. Botolph's, Aldgate (1889). In the latter church two conspicuous and successful features of the scheme are the treatment of the fronts and balustrades of the galleries in white enamel, and that of the cove of the roof above each gallery, with, at the springing, a series of figures of boys supporting the coat-arms in shields of many ecclesiastical persons and institutions connected with the domestic and public history of London. In 1890 Mr. Bentley carried out, at a cost of 2,000*l.*, the restoration of the exterior of the fabric of St. Botolph's, Bishopsgate Without, and nine years afterwards designed the monumental tablet set up in that church as a memorial to the late rector, the Rev. William Rogers, with a profile portrait in low relief, the work being executed by Messrs. Farmer & Brindley. We may add that the last-named firm have made a model of the Westminster Cathedral. Mr. Bentley had been in weak

health for some time, but was not believed to be in any immediate danger, and his sudden death came as a painful surprise to his friends and to the architectural profession. Our illustration, of January 4 last, of the view at the south end is from a drawing by Mr. W. Curtis Green.

MR. DAVID MCGIBBON.—We regret to announce the death, on February 23, at his residence, No. 23, Learmonth-terrace, Queen's Ferry-road, of Mr. David McGibbon, LL.D., aged seventy years, senior partner of the firm of Messrs. McGibbon & Ross, of No. 65, Frederick-street, Edinburgh. Mr. McGibbon, a son of the late Charles McGibbon, Dean of Guild and Master of the Merchant Company, was architect to that Company, and President, in 1899, of the Edinburgh Architectural Association. On April 1, 1899, the University of St. Andrew's conferred upon him, *in absentia*, the honorary degree of Doctor of Laws, as a tribute to his artistic and literary attainments. A native of Edinburgh, he had his earlier education in the High School there, whence he proceeded to Edinburgh University; he then followed his professional studies in both that city and London. He also devoted a considerable portion of time to travelling in France, Spain, and Italy. Of the architectural works designed and carried out in Edinburgh by his firm we should mention the following:—The Girls' College, George-street, 1890-1; additions to George Watson's Boys' College, 1892, with a subsequent enlargement; the Parish Offices; and Petersfield Church, in Dalkeith-road, of which the nave was begun twelve months ago, and for which the plans comprise a church having a capacity for 800 persons, with a church hall, vestry, session-house, and other buildings. Two or three weeks since Messrs. McGibbon & Ross were appointed as architects for the restoration of the cathedral church of Iona so as to afford covered room for over 1,000 worshippers by constructing a new roof for the aisles, south transept, and choir, the present east gable and the gable outline on the face of the central tower being taken as a guide for that portion of the work. As architect to the Merchant Company Mr. McGibbon laid out their feu-ing grounds and built their new schools. He was architect also of the Theatre Royal, the Caledonian Insurance Co.'s offices in George-street, various business premises in Princes-street, and several branch offices for the National Bank of Scotland. As some fruits of his travels on the Continent he brought out, in 1888, a volume entitled "The Architecture of Provence and the Riviera," which we reviewed, with illustrations, on May 18, 1889. He also wrote for private circulation an illustrated work upon "The Abbeys of Galloway." In the interval, 1887-1892, Mr. David McGibbon and his partner, Mr. Thomas Ross brought out their standard work (of which the volumes were reviewed in our columns as they were successively published) upon "The Castellated and Domestic Architecture of Scotland from the Twelfth to the Eighteenth Century." That work they supplemented in 1896-7 with "The Ecclesiastical Architecture of Scotland," reviewed in the *Builder* of March 21, 1896, and October 23, 1897. The illustrations, with views, plans, &c., for the volumes we cite were executed from drawings made, we believe, by Mr. McGibbon's own hand. In August, 1898, Messrs. McGibbon & Ross won the fourth premium of 100*l.* for their plans and designs for the new lunatic asylum at Bangour, for the Edinburgh and District Lunacy Board, upon the award of Mr. W. H. Robertson, assessor to the competition.

MR. GOYMOUR CUTHBERT.—We have, further, to announce the death, suddenly, at Eastbourne, in his fifty-fourth year, of Mr. Goymour Cuthbert, of No. 83, Queen-street, Cheapside, E.C., and Meadow Bank, Blackheath. Mr. Cuthbert was elected an Associate of the Royal Institute of British Architects in 1882. Mr. William Wimble and Mr. Goymour Cuthbert were joint architects of the Royal Courts of Justice-chambers, Strand, illustrated in our columns of January 27, 1883. The building stands opposite the Strand entrance into the Courts of Justice, and was erected for a restaurant, a legal business club, consultation and arbitration-rooms, office-chambers, and so on. The red sandstone of which most of the front was built comes from Aspatria, the granite is from Peterhead. In July, 1898, Mr. Goymour Cuthbert was provisionally appointed to act as joint architect with the late Professor Banister Fletcher for the new Wesleyan Centenary Hall and buildings in Bishopsgate-street Within. After Professor Banister Fletcher's death in July, 1899, Mr. Cuthbert was awarded, upon the recommendation of Mr. Aston Webb, as assessor, in March, 1901, the first premium in respect of his designs and plans, which were adopted by the committee for the new premises. He was Lieutenant-Colonel of the London Rifle Brigade and had received the Volunteer decoration for his services.

THE CATHEDRAL, WESTMINSTER.—We read in the *Tablet* that a donor has purchased from Lord Kinnoull, for presentation to Cardinal Vaughan, the famous "Dupplin carvings," consisting of the fifty-four finely executed choir stalls which originally belonged to the chapel of St. Urban Monastery, near Lucerne, and that the donor undertakes to defray the charges of fitting the stalls in the new Roman Catholic Cathedral.

GENERAL BUILDING NEWS.

METHODIST CHAPEL, OUTWOOD, WAKEFIELD.—A new church and Sunday school have been erected at Outwood, Wakefield. The new building will accommodate 350, and the Sunday school will seat 280 scholars; in addition to which there are five vestries. The total cost, inclusive of furnishing, is about 3,200*l.* The church has been erected from designs by Messrs. Garside & Pennington, of Castleford & Pontefract. The chancel, which is raised from the general floor level, accommodates the choir, and has a communion-table at the end. Over the table is a stained-glass memorial window.

CHURCH BUILDINGS, JARROW.—In connexion with the parish of St. Peter's, Jarrow, the building surrounded by Commercial-road, Chater-street, and Drury-lane—which was originally built for a theatre many years ago, and afterwards used for religious purposes—has been secured by the parishioners of St. Peter's, who have made several internal alterations, and converted it into parish buildings for their use. The main entrance to the buildings is off Commercial-road. On the ground floor is the main hall, which will accommodate 400, and part can be shut off by a movable partition, thus forming a small room for club purposes. At the other end of the hall is a platform having retiring rooms on each side and a store above for books, Church Lads' Brigade rifles, &c. Below is a heating chamber. On the first floor is a club room and a gallery to the hall. The whole of the work has been carried out from the design and under the superintendence of Mr. J. H. Morton, architect, of South Shields. The contractors for the whole of the works are Messrs. Craig & Son, of Jarrow.

CHURCH, NEAR MATLOCK.—The district of Dethick Lea and Holloway is to have a new church erected by the coming summer. The building is to be known as Christ Church, and it stands on the Holloway hillside, overlooking the Matlock ravine. The cost is estimated at 4,000*l.* The foundation-stone was laid on November 2 last year. Mr. J. W. Wildgoose, of Matlock, is the contractor, and Mr. Currey, of Derby, is the architect. The accommodation will afford seating for 400 worshippers, and the building is to be Gothic in style.

CHURCH, STOUGHTON, GUILDFORD.—The final stage of the Stoke Church extension scheme, inaugurated nearly five years ago, was initiated recently, when the foundation-stone of Emmanuel Church, Stoughton, was laid. The plans for the new church were prepared by Mr. W. Gilbee Scott, of London, though it is not contemplated to carry them out in their entirety at present. The new church will be in the Gothic style. When completed it will consist of a nave, divided into five bays, with north and south aisles, and a porch at the west end of each. On the south side of the chancel will be a choir vestry and a clergy vestry. The foundations for a tower are being put in, but this portion of the building will not be proceeded with at present. The lower stage of the intended tower will eventually be used as the organ chamber, a temporary recess being provided in this position for present use. Internally the windows will have red brick dressings, and will be glazed with red light glazing, and the arcades, columns, bases, string courses, and all architectural features will be in Bath stone. The roofs will be open-timbered, stained and varnished. The flooring under the seats will be of wood blocks, and the passages tiled. The roofs will be covered with American green slates. The walls externally will be faced with Bargate stone, with Bath stone dressings throughout. The church will be heated with hot-water apparatus, and the ventilation will be provided by vertical inlet shafts built in the wall under each window opening. The new building will seat about 270. The contractors are Messrs. Webster & Cannon, of Aylesbury. The amount of the contract was 4,290*l.*, but subsequent to its acceptance the committee sanctioned the provision of permanent vestries in place of temporary ones, at an increased cost of 366*l.*

CHURCH, RETFORD.—The plans for the new church in South Retford prepared by Mr. Hodgson Fowler, of Durham, have been approved by the committee, and the contract let to a Sleaford firm of builders.

ASYLUM EXTENSION AND TECHNICAL SCHOOL, PLYMOUTH.—At Plymouth on the 26th ult., Colonel W. Langton Coke, Local Government Board Inspector, held an inquiry, the Plymouth Corporation having asked for powers to borrow 40,000*l.* for the extension of Blackadon Asylum and 10,500*l.* for extending the buildings of the Technical Schools of the borough. There were present Mr. J. Paton (Borough Surveyor), Messrs. Hine and Odgers (architects), Mr. H. J. Snell (architect), and others. The Town Clerk stated that the Borough Asylum at Blackadon was originally built to accommodate 200 lunatics, but with administrative accommodation for officers and others of 400. As a matter of fact, there were at present 280 patients in the Asylum. The plans were explained by Mr. Odgers, who by his estimate showed that for the general block of buildings, reckoning at 6d. per cubic foot, the amount would be 23,875*l.*; the isolation hospital, at 9d. per cubic foot, 5,013*l.*; drainage, 512*l.*; hot-water apparatus, 1,700*l.*; machinery, hot water, gas service, extra boilers, new fittings in kitchen and laundry, 1,500*l.*; temporary fencing, road-making, fire-hydrants, telephone, &c., 2,000*l.*; furnishing, estimated at 3,000*l.*; architects' commission, 1,850*l.*; clerk of the works' salary, 550*l.* The present accommodation was for 90 males and 110 females, 9 male attendants, and 11 female attendants. By the plans put forward for the extension there would be accommodation for 183 males and 223 females, 25 male and 31 female attendants.—As to the Technical Schools, the Committee of the Schools and the Council had approved of the plans of Mr. J. H. Snell, the architect. The present building was opened in 1891, having been erected as a Jubilee memorial. Mr. Snell then explained the plans for the extension.

SCHOOL, INVERURIE.—The plans for the new school to be erected by Inverurie School Board have been approved. The school, which is to be situated near the Market-square of Inverurie, with a wing to Chelsea-road and the frontage to a new street to be formed, will have accommodation for 660 pupils. The estimated cost of the building is between 6,000*l.* and 7,000*l.* The architect is Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen. The main feature of the building will be a central hall, 90 ft. in length by 25 ft. in breadth, and having a height of 22 ft. It will be lit by six dormer windows. On each side of this hall four class-rooms, 25 ft. square, are provided for, and at the front, facing the new street, will be another three classrooms. A room for the headmaster is also provided in the front. Cloakrooms for the senior boys and girls respectively will be placed at each side of the hall near the entrance from the new street. At the back of the central hall there will be cloakrooms for the junior boys and girls, and also rooms for the male and female teachers respectively. From the back a porch will lead to the large playground, where shelter sheds for the boys and girls are to be erected. The playground will be some 280 ft. by 300 ft. in extent, and the school itself 165 ft. by 95 ft. In the basement underneath the school there will be a heating chamber. There will be two main entrances from the new street—one for the boys and one for the girls. Other entrances or exits are provided for at Chelsea-road and High-street. The building is to be of Aberdeenshire grey granite ashlar. For the new schoolhouse, in close proximity to the school, the plans have also been approved.

HARBOUR OFFICES, SWANSEA.—The foundation stone has just been laid of the new harbour offices, which, at a cost of 15,000*l.*, are being erected at the corner of Somerset-place and Adelaide-street, Swansea. In response to advertisements, ninety-seven designs were submitted in competition for the work, and the selected design was that of Mr. Edwin Seward. Tenders for carrying out the work were invited, and that of Messrs. Lloyd Brothers, Swansea, accepted. The whole of the area of the building is now up to a level of about 5 ft. above the street. The building, which is Renaissance in character, is being built in red Cattybrook brick, relieved by Portland stone mouldings and dressings. The trustees determined that they would only provide sufficient accommodation for their own requirements, and in consequence the building is but two stories high. There are two main entrances, one from Somerset-place and one in Adelaide-street, the latter giving direct access to the main shipping office, and the former to the solicitors and accountants' department on the ground floor, approached by corridors communicating with a central hall. A stone staircase leads from this hall to the second floor. On the north side, facing Somerset-place, over the accountants' offices, are the engineers offices; and over the solicitors' offices, looking into Adelaide-street, are the superintendent's suite of rooms. The Boardroom stands over the large shipping office below. Lavatory accommodation is provided on both floors, and the whole of the building will be heated by hot-water pipes and radiators. A few open fireplaces will be provided in the rooms of the principal officers. The building will be lighted throughout with electric light. A feature of the design will be a clock tower over the entrance in Somerset-place.

HOUSES ERECTED IN LIVERPOOL.—Mr. William Goldstraw, the Liverpool Corporation Building Surveyor, has issued his annual report. The new houses built during 1901 numbered 1,963, or 390 more than in 1900, and an excess of the average for the past six years of 175. The building of houses has varied since 1895, reaching the highest point in 1899, when 2,358 houses were erected. Since the extension of the city boundaries in 1895, there was a steady increase in the number of houses erected annually until 1899, the comparative falling off during the last two years being coincident with a remarkable outburst of house-building just beyond the city boundaries, in the Garston district. The districts in which new houses were built in 1901 are:—West Derby, 584; Wavertree, 475; Walton, 391; old city, 316 (of which 277 were tenement houses built by the Corporation, each separate dwelling being counted as a house); Toxteth Park, 197; total, 1,963. West Derby is at the top of the list. In 1900 Wavertree occupied the first position. As compared with 1900, West Derby shows an increase of houses erected last year of 211, the old city an increase of 209, Walton an increase of ninety-one, Wavertree a decrease of six, and Toxteth Park a decrease of 115. The increase in West Derby is attributed to the building upon the Oakhill Estate, Old Swan. In 1900 no houses

under 12*l.* rental were erected, but last year 222 of this type were built (labourers' dwellings built by the Corporation). New houses between 18*l.* to 25*l.* rental are the most numerous of the several types erected last year, the percentage of the various rentals being as follows:—Houses of rental under 12*l.*, 11·31 per cent.; houses of rental from 12*l.* to 18*l.*, 28·43 per cent.; houses of rental from 18*l.* to 25*l.*, 32·24 per cent.; houses of rental from 25*l.* to 35*l.* 22·47 per cent.; houses of rental from 35*l.* upwards, 5·55 per cent. With regard to the general building work of the city, there has been no remarkable change. During last year 464 dwelling-houses, eleven workshops, stables, and other minor buildings, six public buildings, offices, and manufactories were pulled down in the city. No warehouses were demolished.

STOURBRIDGE NEW WORKHOUSE AND COTTAGE HOMES.—At Stourbridge Board of Guardians' meeting recently the Building and Sites Committee brought up a report in which they recommended that the Board should purchase 7½ acres of land as a site for cottage homes for the children at the Heath, at 120*l.* per acre. The recommendation was adopted. The committee recommended the appointment of Mr. Marshall, of Nottingham, as architect for the new workhouse and for the cottage homes. His selection was approved.

THE NEW MUNICIPAL BUILDINGS, CLYDEBANK.—The new municipal buildings for the burgh, situated on Dumbarton-road, are now approaching completion, and the Town Council are arranging for a formal opening. The buildings were begun over three years ago. The suite comprises large hall and lesser hall, public offices for the Burgh officials, police court and police station, library and reading-room. There are also annexes of baths and fire station. Mr. Miller, who was also the architect for the Glasgow Exhibition, was the architect for the buildings. The total cost of all the buildings will be about 55,000*l.*

NEW VARIETY THEATRE FOR GLASGOW.—It is stated that The Empires (Ltd.) Co. have purchased a site in Glasgow upon which they intend to build a large variety theatre. The architect for the building is Mr. Frank Matcham.

POORHOUSE, OLDMILL, ABERDEEN.—Workmen for some time past have been dismantling and demolishing at Oldmill Reformatory the buildings, in order that operations may be started as soon as possible for the erection of the new poorhouse. The architects—Messrs. Brown & Watts—are preparing the necessary specifications.

SANITARY AND ENGINEERING NEWS.

THIRLMERE AQUEDUCT.—The second line of water main from Thirlmere, which the Manchester Corporation have just decided to lay down, will consist of 44 in. diameter pipes capable of conveying 12 million gallons daily. The southern portion, from Manchester to Longridge, about thirty miles, is to be put in hand first, the contractors being Messrs. Monk & Newell, of Bootle, Liverpool.

FENHAM MAIN SEWERAGE.—The Benwell and Fenham Urban District Council some two years ago decided that, owing to the large building developments at Fenham, it was time a comprehensive scheme for the drainage of that part of their district should be undertaken, and accordingly instructed Mr. Harry W. Taylor, of Newcastle-on-Tyne and Birmingham, to prepare plans. These were shortly afterwards adopted by the Council at an estimated cost of 11,500*l.* After considerable delay by the Board of Trade, the plans have at last been approved by the Local Government Board, and tenders are to be invited at once. The sewer will be in a deep tunnel for nearly a mile, the outfall being into the tidal river Tyne at Scotswood. This main sewer will serve a large area, and will no doubt tend to facilitate the building operations considerably.

FOREIGN.

RUSSIA.—The Government and the municipal authorities in St. Petersburg have granted a large sum of money to be devoted to improving the city generally, but with especial reference to the hospital accommodation, which at present is not adequate enough, though St. Petersburg is by no means an unhealthy place. The River Neva requires much more efficient control; the bridge from the city side of the river to the University buildings is being as rapidly built as local circumstances permit, but "temporary" timber bridges, which, in fact, have to last for years, are not very ornamental, and are not creditable to one of the first cities in Europe, especially when the material itself is unsuitable for the purpose, as it is in the case of a river always frozen in winter. We are not surprised that the scope of these improvements include two bridges over the Neva, and that an open competition with large premiums is invited by the municipality of St. Petersburg. Designs will be received in that city by September 14 next, at the Town Hall.

GERMANY.—A marble statue of Count William Bismarck, the late President of the Diet of the Province of East Prussia, is to be placed in the House of the Diet as soon as it can be executed.—We learn that the pumice-stone-brick industry in the Rhine Province has received an enormous impetus during the past few months, owing to the fact that German architects are more inclined to use the material for partitions in upper stories. It possesses the great advantage of being so light that supporting girders are either rendered unnecessary or need only be of the smallest dimensions. These bricks possess the peculiar property of being nearly sound-proof, and are durable even when used in the exterior of a building.

MISCELLANEOUS.

ELECTRIC LIGHTING, NOTTINGHAM.—Lieutenant-Colonel A. C. Smith, R.E., sat at the Nottingham Guildhall on the 25th ult. to hear evidence in connexion with the application of the authorities to the Local Government Board for sanction to borrow 15,000*l.* for purposes of electric lighting. Among those present were Mr. A. Brown (City Engineer), Mr. H. Talbot (Electrical Engineer), and Mr. F. B. Harris (of the Town Clerk's department). It was stated that the population of the city was 239,753, and that the outstanding debts amounted to 1,338,005. The money in respect of which the application had been made was required for electric extensions during the next twelve months, the items including service connexions, 1,500*l.*; meters, 2,000*l.*; and underground mains, 10,000*l.*

Illuminated figure of Fame formed in front of the Victor Hugo House in the recent celebration in Paris; lined out in "E.L.B." electric lights.

YORKSHIRE COLLEGE ENGINEERING SOCIETY.—Professor J. O. Arnold, of Sheffield, lectured on the 24th ult. before the Yorkshire College Engineering Society, on "The Internal Architecture of Metals," Professor Goodman presiding. The causes of the sudden snapping of steel were traced, Professor Arnold remarking on the fact that the Germans were more attentive to the proper annealing of iron than were the English. The St. Neot's rail, which wrecked the Scotch express, was shown; the rail flew, he said, into seventeen pieces, but it had been down twenty-two years, and ought to have been taken up two years before.

STORAGE OF TIMBER IN LONDON.—A meeting of the London section of the Timber Trade Federation was held at the London Chamber of Commerce on Tuesday, the 4th inst., to decide as to what action should be taken, in the interests of the London timber trade, in view of the London County Council having asked the Metropolitan Borough Councils for an expression of their views as to the necessity for further legislation with reference to the alleged danger to which dwelling-houses are exposed by reason of the storage of timber on the roofs of buildings and against the boundaries of yards where such boundaries are adjacent to dwelling-houses. Mr. C. J. Morgan, Vice-President, occupied the chair, and it having been reported that the matter had already been considered by certain District Councils, Mr. G. T. B. Cobbett stated his reasons for contending that the existing law sufficiently met the requirements of the case. After discussion, it was moved by Mr. Cobbett, seconded by Mr. John Grover (builder), and unanimously resolved:—"That, in the opinion of this meeting, as the London Building Act, 1894, sufficiently deals with the question of the storage of timber, no fresh legislation is necessary for the safety of the public." It was agreed to communicate on the subject of the resolution with the Metropolitan Borough Councils, the London County Council, and the trade Press, other action being left in the hands of a sub-committee.

"INVESTMENTS IN HOUSES AND LANDS."—This small book should have been given, under "Books Received" in our last, as published by Effingham Wilson, not by the National Mutual Life Assurance Society, whose conspicuous advertisement stamped on the cover misled us.

THE VICTOR HUGO ILLUMINATIONS, PARIS.—As already mentioned, the illuminations for the recent Victor Hugo celebration at Paris were all put into the hands of an English firm, the "Electric Lighting Board" Co. The most extensive illuminations were at the Place des Vosges, Place Victor Hugo, and Place de l'Hôtel de Ville. A brilliant effect was produced at the Place des Vosges by means of the company's flexible strips studded with lamps of all colours, and right round the entire Place were arranged electric lighting boards, some ninety in number, on each of which was written in coloured electric lamps the name of one of the poet's works. A figure of "Fame" was seen illuminating the house inhabited by Victor Hugo, the design outlined on the E. L. B. system. The decoration scheme in the Place Victor Hugo was made to represent a Roman circus, and in front of each platform were four poles bearing baskets of electric flowers. From these baskets were suspended garlands of electric flowers stretching from pole to pole and disappearing in the rows of trees beyond. The Place de l'Hôtel de Ville was also illuminated by the use of the Company's strip studded with electric lights shaded by artificial flowers, and the principal buildings, including the façade of the Town Hall, were outlined on the E. L. B. system. We give an illustration of the figure formed in electric illumination in front of the poet's former residence.

THE MANCHESTER BUILDING BY-LAWS.—The Improvement and Buildings Committee of the City Council recommend for adoption the new building by-laws which were at the last meeting of the Council sent back to the committee for further consideration. The committee have resolved unanimously—"That the Council be again recommended to make the amended by-laws, which have been formulated and approved in draft by the Local Government Board." In a report on the matter the Deputy Town Clerk states that "the desirability of amending some of the existing by-laws first received consideration by the Improvement and Buildings Committee in April, 1897. The amendments had reference to the thickness of walls of domestic buildings, and especially of party walls; the construction of flues; the regulation of roof battens; the adaptation of the dimensions of timbers in common use by builders; provision for ceiling joists; the repeal from the by-law as to open spaces in front of houses of the exception in favour of plans approved before June 22, 1890, which became obsolete in 1893 by reason of the enactment of section 19 of the Manchester Corporation Act, 1891, limiting the operation of approvals to a period of two years; amendment of the by-laws respecting down spouts so as to prevent their direct communication with drains; better provision as to ventilation of house drains; better and more complete provision as to the size and ventilation of soil pipes; and an amendment of the by-law relating to plans and sec-

tions so as to require them to be prepared in a permanent manner and upon durable material. The amendments have, ever since April, 1897, been under the consideration of the Improvement and Buildings committee, and they have been submitted to and approved by the Sanitary Committee, the Manchester Society of Architects, and the Local Government Board, with whom many conferences and much correspondence have taken place." He further points out "the great desirability of permitting the new by-laws to be brought into operation as early as practicable, having regard to the fact that the Committee (contrary to his frequently expressed opinion) have been sanctioning plans in accordance with such amendments."—*Manchester Guardian*.

PUBLIC WORKS AND BUILDINGS.—The estimated items of expenditure in respect of public works and buildings for the year ending on March 31, 1903, amount to a total of 2,254,602*l*. The estimated net increase (84,387*l*.) includes the following items: Public buildings in Great Britain, 33,000*l*.; revenue buildings, 26,500*l*.; harbours under the Board of Trade, 13,583*l*.; public buildings and works in Ireland, 19,495*l*.; and railways in Ireland, 12,324*l*. For special works at Windsor Castle and Buckingham Palace there is a charge estimated at 10,000*l*., and sums of 6,000*l*. and 1,500*l*. are respectively allotted to the maintenance and repairs of Windsor Castle, and the new works at Buckingham Palace. For the Houses of Parliament buildings the estimate amounts to 43,500*l*., showing a net increase of 5,500*l*.; a sum of 116,200*l*. is needed for the Royal parks and pleasure gardens, and of the net increase (4,700*l*.) under that head, 3,864*l*. relates to new works, alterations, and additions. The estimate for Art and Science buildings in Great Britain is 43,300*l*., the net increase being 9,300*l*. Other requirements stand at 371,000*l*. for revenue buildings, 413,700*l*. for public buildings in Great Britain, 19,061*l* for harbours under the Board of Trade, and 222,172*l*. and 125,802*l*. for public works and buildings and railways respectively in Ireland. The estimates for the Royal palaces and Marlborough House, as for ordinary expenditure, amount to 72,800*l*., showing a net decrease of 31,800*l*., after allowance is made for an increase of 1,604*l*. for maintenance and repairs of the Royal palaces, and of 2,500*l*. for similar expenses at Marlborough House; for the Geological Museum, Jermyn-street, 3,350*l*. for its enlargement; and for the Edinburgh Museum, 3,350*l*. for the completion of the installation of electrical light. The principal building works now in progress in London include the new Savings Bank in West Kensington, the Admiralty, and War Office, Whitehall, and the block of offices on the Parliament and Great George-street sites, Westminster.

NEW CLOCK, KENSINGTON.—We are given to understand that the Government intend to erect a large illuminated turret clock at the Savings Bank, Kensington, for the use of the public, and that Messrs. Wm. Potts & Sons, of Leeds and Newcastle-on-Tyne, have the work in a forward state, and it will be erected at an early date.

SCREENS, UNITARIAN CHURCH, ROCHDALE.—As a memorial of Queen Victoria, there has just been presented to the Rochdale Unitarian Church two carved screens to form a new baptistry. Messrs. Harry Hems & Sons, Exeter, have carved the screens. The screens, which are carved out of English-grown oak, form the new baptistry (at the east end of the south aisle), into which has been removed the old font, with its spiral cover of carved oak.

A WHITEWASHING AND PAINTING MACHINE.—Messrs. Wallach Bros. have sent us an illustration and description of their "Star" whitewashing, cold water painting, and calcimining machine. By this machine, which is a hand pump with a flexible tube and rose connected with it, the whitewash or paint is pumped over the surface to be covered. They claim that the expense of whitewashing is reduced 25 per cent. by the use of this machine, and that cracks and crevices can be filled up more completely than by hand. The barrel of the pump is made of brass, and will not corrode. As far as we can judge by illustrations and description, we see reason to think the method quite worth attention where there are large surfaces to be treated with whitewash or plain colour.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—At a meeting of the Devon and Exeter Architectural Society, held at Exeter on Friday last week, a paper was read by Mr. A. T. Parker, of Plymouth, on "Building By-laws," followed by a discussion.

HOUSE CONSTRUCTION AND SANITATION.—The first of a series of four lectures on house sanitation was delivered on the 26th ult. in the physiology classroom of the Queen's College, Belfast, by Professor W. H. Thompson, M.D., F.R.C.S., on "The Situation and Principles of House Construction." In house construction the first thing naturally was the selection of a site. The essential points to be looked for in the choice of a site for building upon were as follows: (1) A moderately elevated situation, with a slope in one direction at least, and sheltered from the north and east, but not shut in by hills at too close a range; (2) a porous soil, with a subsoil sufficiently permeable to secure thorough drainage away of the surface water which fell; (3) a situation in which the ground water was not nearer the surface than 8 ft., and not subject to great fluctuations; (4) a situation where the soil and subsoil were clean, and not fouled by either sewage or refuse; (5) a place which would allow of facilities for a good water supply. Turning to the question of house construction, he said the great problem was undoubtedly the satisfactory housing of the artisan and poorer classes of town dwellers. Having alluded to the evil effects of overcrowding and the proper methods to be adopted with regard to the formation of streets and sewerage, the lecturer went on to deal with the principles of the construction of individual houses. The primary objects to be aimed at were to secure the health and comfort of the inmates. In the proper construction of houses the foundation should consist of a solid platform of stone or concrete, deep enough to give firmness and stability to the building. This should be at least three or four times as broad as the walls. The bases of the walls should be expanded into footings of about twice the width of the wall itself. If there were a basement story, the earth should be cleared away all round the house, so that none directly abutted against the wall, or if any such were impossible, a device recommended by the Local Government Board might be employed. This consisted in making the wall hollow up to a point above the ground level. A damp-proof course should be inserted in the wall a few inches above the level also; that was formed of a layer of impervious material, such as slates, &c., and embedded in cement. In the case of underground stories the damp course should be beneath the level of the lowest floor, and if a hollow wall were adopted instead of an area two such courses should be laid, one at the bottom of the hollow and the other at the top, and therefore above the ground level. Taking it all round, brick was the best material with which to construct walls.

LEGAL.

ACTION BY A BUILDER FOR RESCISSION OF CONTRACT.

THE case of Baker *v.* Moss came before Mr. Justice Joyce, in the Chancery Division last week. It was an action by the plaintiff, a builder, against the defendant for rescission of a contract to purchase 2 acres of land at Shepherd's Bush, on the ground that he had entered into the contract in the belief that certain statements and representations contained in the particulars of sale were true, which was not the fact.

Mr. Hughes, K.C., and Mr. Coote appeared for the plaintiff; and Mr. Younger, K.C., and Mr. Buckmaster for the defendant.

It appeared that the property in question was purchased by the defendant in 1897, and on March 21, 1901, he put it up for sale by auction, the particulars of sale containing the following:—"The capital freehold building site situate about fifteen minutes from the tube station, and in the midst of a capital letting class of property. . . . Ripe for immediate development." The plaintiff attended the sale, and became the purchaser of this property at a price of 1,500*l*., paying the usual deposit. He afterwards found out that the land in question had been excavated some years before to a depth varying between 7 ft. to 20 ft., the gravel and sand being taken out, the excavations having been filled up with road scrapings, dust, refuse, and other rubbish. The plaintiff's case was that in consequence of this the by-laws of the London County Council prohibited him building on the land, except under certain conditions. It seemed that the excavation took place between the years 1886 and 1890, and that a large pond was thereby found on the land. In 1892 the water became very offensive, and the Medical Officer of Health for the district, who was called in to report on the matter, reported that it would be dangerous in the interest of the public health to build on the site. After a time the water was got rid of and the excavations filled in, the land now being covered with grass. The plaintiff alleged that he was unaware of the character of the land, and that he had been induced by the particulars of the property to believe that the site was available for building, the purpose for which he bought it.

The defendant's case was that the land was correctly described in the particulars of sale; that the plaintiff had full knowledge of all material facts relating to the land before agreeing to buy the same; and that if the soil were excavated and proper foundations laid, the land could be used for building without contravening the by-laws of the County Council.

At the conclusion of the arguments of counsel, Mr. Justice Joyce, in giving judgment, held that there had been a serious misdescription of the property in an essential particular. The land was offered for sale as a "capital freehold building site ripe for immediate development." It, however, turned out that the land could not be used for building without a most extraordinary expenditure. He found, as a fact, that the plaintiff did rely upon the misrepresentation, and was induced by it to buy the property. He accordingly gave judgment for the plaintiff, with costs.

BUILDING DISPUTE AT EALING.

THE case of Wright *v.* Bury came before Mr. Justice Byrne in the Chancery Division, on the 28th ult., on a motion by the plaintiff for an interim injunction to restrain the defendants erecting on two plots of land belonging to them in the Regina-road, Ealing, buildings intended to be used as homes for aged poor people, in alleged violation of the building scheme of the St. Kilda Estate, under which these particular plots of land were said to have been appropriated for the erection of private residences only.

Mr. Mulligan, K.C., and Mr. Underhill appeared in support of the motion; and Mr. Levett, K.C., and Mr. O. Leigh Clare for the defendants.

It appeared that in March, 1899, the St. Kilda Estate, a building estate at Ealing, was put up for sale, being described in the particulars as "consisting of 188 large choice plots for the erection of private residences." There was also attached to the particulars a condition that no building of any kind other than a detached or semi-detached house, with appropriate offices and outbuildings appurtenant thereto, should be erected on any plot. The defendants, three days before this sale, purchased two of the plots, and in the conveyance the defendants covenanted with the vendor not to erect any buildings of any kind on the lots so purchased other than a detached or semi-detached house in the terms of the before-mentioned condition. The plaintiff afterwards purchased, under similar conditions of sale, four of these lots, which were situated opposite to those purchased by the defendants, on which he built four private dwelling houses. The defendants did not build on their plots until September, 1900, when they put up a notice stating their intention to build a home for poor people, and asking for subscriptions. The plaintiff, on protesting against this, was informed that the defendants' proposed building would only be a private house. In November, 1901, the defendants commenced to build, on behalf of the Ealing Cottage Homes for the Aged Poor, a set of self-contained living-rooms for the accommodation for about fourteen families, with a common entrance, kitchen, sink, and offices, but otherwise independent of each other. The plaintiff's case was that such an erection by the defendants would diminish the value of his property by 30 per cent., and he brought the present action. Hence the present application for an interim injunction. The defendants' case was that they were building ordinary eight-roomed houses which could be used, if required, as private residences.

At the conclusion of the arguments, his lordship, in giving judgment, said what the defendants were building and proposed to build was an ordinary eight-roomed house on each plot, and without any knowledge of the purpose for which these erections were to be used, he should say that they answered in every respect the description of a private dwelling house. It looked as though the architect had purposely designed the buildings in this way in case their erection should be stopped and so that they might, if necessary, be at any time used as private dwelling houses. What the plaintiff really complained of was the proposed use of these buildings, but that was not the relief asked for by the notice of motion. He thought that no case for an *interim* injunction had been made out, and in his opinion the motion failed.

The motion was accordingly dismissed.

ACTION BY A BUILDING OWNER AT FOLKESTONE.

MR. JUSTICE BYRNE, in the Chancery Division, on the 4th inst., had before him the case of Lord Radnor *v.* the Gordon Hotels, Ltd., an action by the plaintiff against the defendants, the lessees of the Hôtel Métropole at Folkestone, to restrain the erection by the defendants of barriers across the road running on the western side of the hotel from the Leas to the Sandgate-road, whereby the plaintiff, his lessees, and tenants of the land adjoining, were obstructed in the free use for all purposes of the existing roadway. The plaintiff also complained of a nuisance caused by the defendants in allowing unconsumed smoke from the chimney-shaft of the hotel caused by furnaces and appliances used for the heating and electric lighting of the hotel. The plaintiff also further complained that the defendants, in breach of a covenant in their lease, had kept no boxes of flowers or evergreens, or any work of an ornamental character, on the flat roof of the engine-house. The main dispute in the case was as to the barriers, which the plaintiff said were a violation of the whole building scheme of his estate.

At the conclusion of the arguments his lordship allowed the plaintiff 40*s*. damages on the claim for nuisance caused by the smoke, nominal damages being only asked for under this head. With regard to the second head of claim, as to the alleged breach of the covenant to place boxes of flowers or evergreens, &c., on the roof of the engine-house, his lordship thought that the defendants had, before action brought, complied with the terms of the covenant, and refused to award the plaintiff any damages in respect of this. On the other part of the claim, as to the barriers which the defendants had erected

his lordship was of opinion that there was nothing in the lease to prevent the defendants from putting up the barriers they had erected, and the plaintiff's claim to restrain them accordingly failed.

Judgment accordingly.

Mr. Levett, K.C., and Mr. Davenport appeared for the plaintiff; and Mr. Warmington, K.C., and Mr. Kirby for the defendants.

ANCIENT LIGHT DISPUTE—SMALL DAMAGES.

MR. JUSTICE JOYCE, in the Chancery Division on the 4th inst., delivered judgment in the case of Avery and Wolmerson *v.* Lewis, briefly reported in last week's issue of the *Builder*.

This was a light and air case having reference to premises in New Cross-road, S.E., the plaintiffs alleging that the new building, which the defendants had erected, materially diminished the light to two windows at the rear of their premises, such lights being ancient. They claimed a mandatory injunction and damages. The defendant denied that the plaintiffs' light had been materially or substantially interfered with.

The expert witnesses called on behalf of the plaintiffs were Messrs. J. Webster, Forbes, and Downes; and on behalf of the defendants Messrs. E. A. Grüning, Sidney Goss, Bruce Dawson, H. W. Page, and W. Wall.

The facts of the case sufficiently appear from the judgment.

His Lordship, in giving judgment, said this was an action in respect of the obstruction, or the alleged obstruction, of the access of light to two windows in the plaintiffs' offices, windows which were 4 ft. 3 in. in height and 3 ft. in width, and the sill of which was 7 ft. 2 in. from the ground. The windows looked due east, and at right angles to the wall in which the windows were placed. A little to the south was a high building which, no doubt, very much obstructed the light to these windows. There was, however, no lateral obstruction, but practically when you came to examine the plans and sections he thought the access of light to those windows was, except by the building to the south, practically unobstructed. The obstruction the plaintiffs complained of was in the shape of a building only 5 ft. 6 in. away from the wall in which the windows in question were placed. The building containing these windows was leased in July, 1887, for a term of sixty years, of which there were about forty-four years still to run at a rent of 60*l.* a year. In 1892 this lease was assigned to the plaintiffs a firm of solicitors, who used the room in which the lights mentioned were, as the private room of the partners, or one of them. The defendants proposed building in 1901, and the plaintiffs were informed that the building was to be erected in such a manner as would not interfere with their lights. On October 24 the building was commenced, and on November 6 the plaintiffs, as they said, knowing nothing about it before, discovered the wall of which they complained being built up 5½ ft. away from the wall in which their windows were. That was on November 6, and at 2.45 p.m. on that day this wall, which was parallel to the wall in which the plaintiffs' windows were placed, was up to the level of the sill of the windows. In the course of the afternoon the building proceeded, and about 5 o'clock on that day the wall was up to 3 ft. 8 in. above the level of the sill of the plaintiffs' windows, as shown on the plans. His lordship, having explained the defendants' plans and sections, said he had not the slightest doubt in his own mind that the defendants' building as originally intended to be erected would have been a very serious obstruction to the access of light to these two windows, and he thought the wall as it had been raised was a material obstruction to the access of light to the same windows. In that state of things, the defendants gave an undertaking that nothing further should be done for some time and without forty-eight hours' notice, but on November 13 the architects of the defendant wrote to the architects of the plaintiffs a letter upon which stress had been placed. That letter said that Mr. Lewis, the defendant, had instructed them to inform the plaintiffs' architects that though he did not admit that the building as originally intended would damage the plaintiffs' property, he hoped to meet their wishes to keep the wall down as far as possible to within 7 ft. above the existing floor. The letter went on to state that they proposed to start on this part of the building on the Friday. A sketch plan not drawn to scale, with these suggestions was given. His Lordship thought the defendant's proposed building would have been an obstruction as to the access of light to the plaintiffs' windows. This letter from the defendant's architects to the plaintiffs' architects did not ask for any reply. It was simply a notice by the defendant's architects of what they intended to do. On the next day the plaintiffs' architects wrote in reply that they had seen their clients, and they were not prepared to accede to the proposition contained in their letter, and they would, therefore, be compelled to have recourse to the courts to enforce their rights. His Lordship could see nothing improper in that letter. But there was a subsequent letter which, to his Lordship's mind, was a very important one—a letter of November 15 from the defendant himself to the plaintiffs. He said that his offer through his architects, which was written to avoid litigation, having been declined, he withdrew it. He said he did not intend to build the wall opposite the plaintiffs any higher, and he left them to take any steps they liked. In his Lordship's opinion the first sentence as to the offer was a misstatement, and was written under a misapprehension. There was no offer in the letter written by the defendants' architects to the plaintiffs' architects, but merely notice of what they intended to do. On November 16 the writ in the action was istued. In his Lordship's opinion at that time a serious and real obstruction of the access of light to these windows was threatened, and this action was perfectly justified. Then notice of motion was given of an interim injunction, and it came on at the end of November, when an order was made, upon an undertaking given by the defendants that the action was to be set down for trial without pleadings, the defendants undertaking not to obstruct a greater angle of light measured from the centre of the windows of the plaintiffs' offices than was obstructed by the defendants' wall as it then stood. That undertaking had been complied with. On December 3 notice of trial was given, and his Lordship was of opinion that notice of trial was properly given. He might observe that there had never been any application to pay the plaintiffs' costs. Afterwards the defendants took down the wall as it stood at the time of the commencement of the action, and they completed the building as shown on the plan. In his Lordship's opinion there was no question of law to be decided in this case at all—it was merely a question of fact. The only real question was whether the obstruction was sufficient to entitle the plaintiffs to relief. As the law stood at present, it was very difficult to say whether the obstruction created by the defendants' building was "sufficient," "material," and "substantial," so as to entitle the plaintiffs to relief. Sometimes it had been laid down that it must be a sensible obstruction, but the difficulty was they had no definition of what was meant by "sensible," "substantial," and "material." No rule had been laid down which enabled him to say on which side of the line the obstruction might be. The court had to do the best it could to lay down a line of what was "material" and what was not. He must say that looking carefully at the plans and sections he should have expected the witnesses to say that there was material obstruction. Of the witnesses called on behalf of the plaintiffs, the plaintiffs themselves were really the best witnesses to speak to the obstruction, they being constantly in the office. He saw no reason to disbelieve the plaintiff's evidence, which said that the light had been materially diminished and that the room was not so convenient for business as it was before the defendants' building was erected. The defendants' witnesses admitted there was a difference but said it was merely immaterial or theoretical. Mr. Webster, whom one saw frequently on these cases, said that the light was substantially diminished and he saw no reason to disbelieve his evidence. Dealing with the defendants' expert witnesses his lordship, referring to Mr. Grüning's evidence, said that he had advanced views which it was impossible for him to accept. He said that there was no material obstruction so long as there was sufficient light left for ordinary purposes. Mr. Bruce Dawson said there was no substantial obstruction, though there was theoretical obstruction. The defendant's witnesses generally did not deny there was obstruction, but they strove to minimise the extent of its importance. Well, it was on all this evidence that he had to come to a conclusion, and the conclusion he had come to was that there was a sensible and material obstruction to these two windows, especially the northern one—not very great, but still sufficient to maintain the action. The defendant appeared to him to have gone a little too high. Ought he, in these circumstances, to order the defendant to pull down? Although he thought there was sensible or material obstruction, still it was a small act, seeing the circumstances under which the building was erected, and kept within the undertaking of the defendant when the order was made on November 29. In these circumstances he had come to the conclusion that he ought not to make a mandatory order. Ought he to send the case to a Master for an inquiry as to damages? He thought not, because if he sent it to a Master the costs of that inquiry would exceed the sum he thought would cover the damage to the plaintiffs. The order he made was that the defendant should pay the costs of the action, and he awarded the plaintiffs 10*l.* damages.

Judgment accordingly.

Mr. Hughes, K.C., and Mr. Humphreys were counsel for the plaintiffs; and Mr. Younger, K.C., and Mr. Jolly for the defendant.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

ERRATUM.—In No. 19,061, p. 222 *ante*, "up" should have been "tip."

19,198. — LIFTING-TACKLE: *B. Wesselmann.* — Enlargements at the lower ends of the strap of a screw lifting-tackle contain fixed, and either hollo or solid, rods which, together with cross-bars, constitute a framing for the worm-shaft, the rods are secured by screwing, or with cottars, or by causing their middle portions to fit into the enlargements, the straps being cut from a rolled bar of the section required. In another shape the frame is rendered detachable by the affixing of the enlargements to the straps with screws or by similar means, or the enlargements are fashioned upon separated pieces welded on to the strap the worm-wheel shaft being taken by the thickened welds; an extension of one of the cross-bars provides a guard for the chain-wheel.

19,206. — IMPROVEMENTS IN LIFTING-JACKS: *W. H. Brenton.*—A lever, which should have a U-section, is pivoted in the head of an adjustable standard and carries a pawl which, under normal conditions, a spring retains in engagement with teeth in the head of the standard, close to the handle of the lever is another lever for disengaging the pawl which is joined to it by a rod.

19,220.—A SUPPORT FOR ELECTRICAL LAMPS: *H. Hirst and F. H. Collings.*—The case of a coupling for pendants and other fittings consists of two halves, of which one is fashioned with a projecting rim or lip, and the other with a screw-thread or projecting pins that will engage with a connecting-ring having bayonet slots or being correspondingly screw-threaded; within the casing are placed insulators that are pierced for the connecting wires, and are fitted with contact-plates and spring-plungers, the relative turning of the parts is prevented by means of pins and slots in the insulators and the two halves of the casing.

19,264.—TREATMENT OF SEWAGE AND FOUL WATERS: *D. Cameron, F. F. Commin, and A. F. Martin.*—In order to intercept road grit the inventors furnish hinged guide boards for the grit-chambers, so that the floating solids in the stream of sewage shall be confined to a narrowed passage, which should not be wider than the sewer. Pierced or slotted wells or shafts, fitted with valves, serve to draw liquid from the grit-chambers before the removal of their contents, and fixed boards or floats may be employed instead of the hinged boards. For supplying sewage to a filter or bacterial bed are furnished castings or funnels, mounted upon shafts carried upwards from the floor of the bed, and connected to one another with supply-channels that can be drained by means of a pipe set in communication with a container wherein heavy matters will be deposited.

19,268.—FLUSHING APPARATUS: *F. Wangelin.*—A rocking arm, weighted at each of its ends, controls the inlet-cock; a siphon that communicates with the discharge-pipe is set within the compartment in which one of the weights will operate, and it will be started, normally, by the current of the flush, so as to empty the compartment, whereupon the weight will descend to open the inlet. The siphon, however, will not be started, nor will the inlet become opened, in the event of the cistern being emptied by a slow leakage. A float working within the compartment may, upon occasion, be fitted on to the rocking-arm.

19,326.—A PREPARATION FOR BRAZING PURPOSES: *L. Alpe.*—Instead of borax, a composition is prepared of boracic acid—85 parts, chloride of barium—5 parts, cryolite—5 parts, and graphite—5 parts.

19,327.—SCREW-UNIONS FOR PIPES: *G. Chisholm.*—Metallic pipe unions are stamped, cut, and pressed out of sheet-metal. The end of a round blank that has been cupped is perforated, and the resultant tube is pressed, with certain specified tools, so as to form a rounded shoulder upon it; then, having been placed in another die, it is pressed with a top-tool into the necessary shape, and a screw-thread is cut on the shoulder, the male portion of the union being similarly prepared, a screw collar is fashioned out of a perforated cup, and shapened—the two parts thus constitute a union ready for use.

19,371.—AN ELECTRICAL SWITCH: *E. Norris.*—Electro-magnetical means of opening the armature circuit in cases of over-load and under-load are adapted for the starting-switch of a shunt-wound motor. A dipper mounted upon a pivoted arm dips into some semi-conducting liquid within a box, a weight which an electro-magnet keeps down tends to turn the arm. For under-load only a single winding is fitted for the magnet, but for over-load as well as under-load a compound winding is employed.

19,392.—A CEMENT: *K. Muller.*—For use in making fine castings the inventor devises an admixture of calcium sulphate, and a saturated solution of magnesium sulphate compounded with burned magnesia.

19,397.—A METHOD OF FASTENING CASEMENTS, WINDOWS, &C.: *E. H. Stodart.*—To the inner sash of a window is secured a socket that provides a bearing for a bolt to be drawn back with a spring, there are projections at one end of the bolt and a knob on its other end, the bolt will pass through an opening in a socket upon the other sash, and—for fastening purposes—it is forced through the opening, turned through 90 deg., and then drawn back by means of the spring in order that it may engage with a recess fashioned in the socket on the latter sash.

19,420.—SPIGOT-AND-SOCKET JOINTS FOR CLOSET PIPES: *N. E. Cook.*—The basin of the closet is

socketed in the trap in the ordinary manner, but in order that it shall not be tilted forwards a projection that will engage with a catch on the trap is fashioned upon the basin, the parts being locked with a wooden wedge. A ground conical joint may also be used, and the trap may be flanged and bolted on to the basin, or, otherwise, the projection may constitute a flange around the basin.

19,440.—MECHANISM FOR FLOAT VALVES: *A. Cruickshanks and A. Scrivenor.*—In order that the working level may be adjusted whilst a full range for the opening and closing movements is obtained, a rotatory valve, or a flat or tubular slide, is set to work in or upon an adjustable sleeve or port-face. The specification includes several forms of the invention, which is available for controlling the water level in, and the feed of water to, tanks, vats, boilers, and similar vessels.

19,484.—AN EXPANSION JOINT FOR PIPES: *C. Wills.*—An expansion and gastight joint, which is described as being particularly applicable to pedestal closets, has an elastic packing-ring that lies above two other rings of asbestos, or some such material, by which means it is not liable to the action of sewage or of sewage gas. Studs or bolts secure the gland to the socket.

19,485.—A METHOD OF VENTILATION: *A. Meyer.*—In the case of certain confined spaces—as, for instance, a room containing a set of fermenting vats—the air is drawn by exhaustion through shafts fitted with filters and non-return valves, and thence, after having been passed over either warming or cooling pipes, is conveyed through perforated and movable partitions into the room. The air is next conveyed through funnel-shaped mouths to an exhaust vessel with which the vats are in communication.

19,515.—TREATMENT OF WOOD: *G. F. Lebioda.*—A solution for preserving wood and rendering it fireproof consists of borax—10 parts, sulphate of ammonia—40 parts, and boric acid—about 6 parts. The wood may be steeped in, or sprinkled or coated with the preparation.

19,525.—AN APPLIANCE FOR USE IN GEODETICAL MEASUREMENT: *F. Deinert.*—The inventor furnishes means of a ready correction of variations in the length of a steel measuring-tape arising from changes of the temperature. After the tape has been laid along the ground (and, by preference, clamped to a rail), one end and a corresponding screw-adjusted carrying-block are joined together with a spring balance, which, at a chosen degree of temperature, imparts a certain amount of normal tension to the tape; but when the length of the tape becomes altered through a change of the temperature, the screw of the carrying block will move the block until the balance indicates twice the amount of displacement from normal to that which has been caused by the variation. The reading of deviation from the normal tension is signalled to the operators along a second wire.

19,548. — BRICK-MOULDING MACHINERY: *F. Johnson.*—For facility of repair in the case of a combined rotatory table machine and cam, or of a similar press, the inventor makes the pug-mill shaft in two flanged parts, to be bolted together, and also makes the barrel in two or more parts. Due provision is made for rotating the mould-table intermittently, and levers join opposite plungers to one another whereby one will be lifted to expel the brick as the other is being lowered by the clay impelled through the pug-mill. A cam-worked lever removes the brick from the table to the press, where the brick is compressed between plungers of which the lengths can be adjusted and which are joined with vertical rods.

19,566.—SAFETY-APPARATUS FOR LIFTS: *T. McInroy.*—The apparatus is intended to effect an automatical closing of a well-door as the cage goes away, and is adapted to vertically-closing and vertically-hinged doors, as well as to horizontally-collapsible doors. A door after the first-named kind is held opened with a catch, upon one end of a lever, which will be disengaged by the other and curved end of the lever as it impinges against one or the other of pins affixed to the cage, otherwise it is contrived that the engaging faces of either the catch or the door shall be so inclined as to have a tendency to become separated whilst the pressure of a plate upon the cage, that acts by means of a spring, keeps the engagement in action; two weights serve to balance, in part, the weight of the door, and one of them comes into play when the door is almost shut. For a vertically-hinged door the lever is cranked. In the case of a collapsible door the catch will engage with the weights, and not with the door, to the free end whereof, or to a lazy-tongs extension, the weights are joined.

19,575.—A CONTRIVANCE FOR USE WITH HOISTS AND LIFTS: *J. G. Childs.*—Prongs upon a bar are secured to endless ropes around pulleys at the top and bottom of the well, so as to constitute a series of swinging platforms. Each platform has rollers that engage with guides, and there are bars that can be turned into the well, upon which articles can be laid.

19,584.—IMPROVEMENTS IN PLIERS: *R. Hollweg.*—Grooved linings, either fixed or removable, are provided for the jaws of the pliers, and are made of brass, copper, lead, wood, &c., as may be most suitable for the work.

19,597.—A COMPOSITE MATERIAL FOR BUILDERS' USE: *E. Bushman.*—The compound is made up of pulverised silica and flint, oxide of zinc, a solution of borax, caustic potash, caustic soda, aluminium, asbestos, water, and a quantity of silicate of soda enough to form it into a thick paste. The material is specified as being adapted for fireproof and waterproof covering for ceilings and walls, for flooring and paving purposes, for baths, sinks, and so on.

19,608.—A COMPOSITE PLASTER FOR SLABS, SHEETS, &c: *C. W. T. Eustance and J. D. Colley.*—Plates for general plaster-work, including walls, partitions, ceilings, and so on, are moulded under pressure from an admixture of plaster of Paris, twenty-two parts; water, containing 5 per cent. of common salt, forty-four parts; hair, four parts; oak sawdust, fifteen parts; and shavings or horn paringa, fifteen parts. The sheets may be secured with cement, or be screwed or nailed on to woodwork, and when placed can be bevelled and finished with sandpaper. Their surfaces can be papered, painted, or distempered, and the joints be filled with plaster. They are also available for temporary structures, in the place of iron, wood, or brickwork.

19,639.—A WINCH FOR USE WITH DREDGERS: *F. Lobnitz.*—A handle which is cranked on to a ring upon the boss of the drum enables one to move the chain-drum, which runs loosely upon the driving-shaft to either the right or the left. When the drum is moved towards the left a friction-disc, or a positive clutch, upon the drum will engage with a fixed half-ring; when it is moved towards the right the drum will become coupled to the shaft through the engagement of clutches on the drum with corresponding stationary clutches.

19,646.—KILNS FOR EARTHENWARE GOODS: *J. R. W. Woodward and N. Collier.*—Concentrical chambers are disposed under the removable perforated floor, and similarly placed flues or grooves which lead therefrom have intersecting radial flues which are conducted to the main flue, an air-space around the main flue opens into passages which, with others over them, convey heated air to the fire-holes; the goods can be cooled by shutting the chimney-damper and opening a man-hole for cold air which will flow through the kiln in a direction contrary to that followed by the heating-gases and thence through an aperture in the roof.

MEETINGS.

FRIDAY, MARCH 7.

Architectural Association.—Mr. J. Miller on "The Glasgow Exhibition." 7.30 p.m.

Birmingham Architectural Association. — Mr. F. E. P. Edwards on "Elmo's Work in Liverpool."

Sanitary Institute (Lectures for Sanitary Officers).—Dr. H. R. Kenwood on "Elementary Statistics." 7 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. W. Beaton on "Glasgow International Exhibition, 1901." 8 p.m.

SATURDAY, MARCH 8.

Royal Institution. — Rt. Hon. Lord Rayleigh on "Some Electrical Developements" IV. 3 p.m.

British Institute of Certified Carpenters.—Visit to Messrs. F. W. Reynolds, engineers, Blackfriars-road. 3 p.m.

Hartley College Engineering Society (Southampton).—Mr. R. H. Dyer on "Domestic Sanitation." 7 p.m.

Edinburgh Architectural Association. — Visit to Edinburgh and Leith Corporations new gasworks at Granton.

Dundee Institute of Architecture.—Mr. D. L. Allan on "Brittany." 7 p.m.

Architectural Association.—Third Spring Visit—Messrs. Derry & Toms' new premises, rear of 111-119, Kensington High-street, by permission of the architect, Mr. F. E. Williams. 2.30 p.m.

MONDAY, MARCH 10.

Surveyors Institution.—Paper by Mr. C. H. Bedells, entitled "Notes on the Insurance of Buildings against Fire." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor R. Elsey Smith on "Building Materials." 7 p.m.

Society of Arts (Cantor Lectures).—Mr. J. D. Geddes, F.R.P.S. on "Photography Applied to Illustration and Printing."—II. 8 p.m.

Clerks of Works Association.—Monthly meeting, Carpenters' Hall. 7.30 p.m.

Bristol Society of Architects.—Mr. H. Chatfeild Clarke on "Ancient Lights." 8 p.m.

TUESDAY, MARCH 11.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. Wright Clarke on "Details of Plumbers' Work." 7 p.m.

Institution of Civil Engineers.—Paper to be further discussed: "Electrical Traction on Railways," by Messrs. W. M. Mordey and Bernard M. Jenkin. 8 p.m.

Institution of Electrical Engineers (Glasgow Section).—"Note on a New Electro-Magnet for Use in Magneto-Optic Work," by Professor A. Gray. 8 p.m.

WEDNESDAY, MARCH 12.

Architects' Benevolent Society.—Annual General Meeting of the subscribers and donors, in the rooms of the Royal Institute of British Architects. The President, Mr. William Emerson, will take the chair at 5 o'clock.

Edinburgh Architectural Association.—Paper by Professor Baldwin Brown, entitled "Some Thoughts on the Dome as an Architectural Form." 8 p.m.

Northern Architectural Association.—Annual meeting. 7.30 p.m.

THURSDAY, MARCH 13.

Institution of Electrical Engineers.—Adjourned discussion on the following papers:—"Electric Shock, and Legislation thereon," by Major-General C. E. Webber; "Electric Shocks," by Mr. F. B. Aspinall; "Electric Shocks at 500 volts," by Mr. A. P. Trotter. 8 p.m.

Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).—Professor T. Roger Smith on "Exeter Cathedral." 8 p.m.

Institute of Sanitary Engineers, Limited. — The Examination and Literary Committee, 3.45 p.m. General Purposes and Finance Committee, 4 p.m. Extraordinary general meeting, 5 p.m. Election Committee, 5.30 p.m. Sessional meeting, 7 p.m.

Leeds and Yorkshire Architectural Society. — Mr. Ernest Newton on "House Building." 6.30 p.m.

Manchester Society of Architects. — Discussion on Students' drawings.

Society for the Encouragement of the Fine Arts.—Mr. E. O. Sachs on "Artistic Electric Illumination," with demonstrations. 8 p.m.

FRIDAY, MARCH 14.

Architectural Association Discussion Section.—Mr. H. C. Lander on "Co-operative Homes." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor R. Elsey Smith on "Sanitary Building Construction and Planning: Soil and Local Physical Conditions." 7 p.m.

Institution of Junior Engineers. (*Westminster Palace Hotel*).—Paper on "The Uses of Engineering Models," by Mr. Percival Marshall, Chairman. 8 p.m.

Sheffield Society of Architects and Surveyors.—Paper by Mr. T. G. Jackson, R.A.

Institution of Civil Engineers.—(Students' meeting).—Mr. H. J. Deane, B.E., on "The Use of Long Steel Wires in Surveying." 8 p.m.

SATURDAY, MARCH 15.

Institution of Junior Engineers.—Conversazione at the Westminster Palace Hotel. Reception at 7 p.m. by the President (Sir John Jackson, F.R.S.E.) and Lady Jackson, the Chairman and Mrs. Marshall.

Royal Institution.—Right Hon. Lord Rayleigh, M.A., on "Some Electrical Developments." V. 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers). — Inspection at the Sewage Works, Sutton, Surrey. 3 p.m.

Hartley College Engineering Society, Southampton.—Mr. S. W. Smith on "The Microstructure of Steel." 7 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 19.—By G. LOVEITT & SONS (at Brinklow).

Brinklow, Warwick.—Fourteen freehold cottages, w.r. 78*l.* 13*s.*	£815
East View House, f., p.	400

February 21—By WILLSON & PHILLIPS (at Great Wakering).

Great Wakering, Essex.—New Town, Howard's Villa, f., p.	250
Great Wakering-st., freehold house and shop and seven cottages, y.r. 53*l.* 18.	1,000
2, Olive Villas, f., y.r. 15*l.* 12*s.*	260
2, Alpha Villas, f., q.r. 15*l.* 12*s.*	270
Shoeburyness, Essex.—Grove-rd., Salvation Army hall and cottage adjoining, f., y.r. 36*l.*	475

☞ February 24.—By GEO. BRINSLEY & SON.

Chelsea.—33 and 35, Caversham-st., u.t. 40 yrs., g.r. 4*l.* 10*s.*, y.r. 60*l.*	730

By GEO. HEAD & CO.

Dormans Park, Surrey.—The House by the Lake and 3 a. 2 r. 21 p., f., p.	2,550
Bath, Somerset.—Sion Hill, a perpetual yearly charge of 34*l.*	800

By MAY & PHILPOT.

Brixton.—86, Tulse Hill, and ½ a., p.t. 48 yrs., g.r. 22*l.*, p.	900
145, Tulse Hill, u.t. 45½ yrs., g.r. 30*l.*, p.	1,100
Streatham.—11, Lewin-rd., u.t. 85 yrs., g.r. 12*l.* 10*s.*, p.	500

By THOMAS, PEYER, & MILES.

Dunkerton, Somerset.—The Cross Ways p.-h., and 10 a. 0 r. 4 p., f., y.r. 50*l.*	1,500

By G. A. WILKINSON & SON.

City of London.—Philpot-lane, f.g.r. 300*l.*, reversion in 68½ yrs.	10,250
35, Basinghall-st., building site, area 1,080 ft., f.	5,600
Bow.—190, Bow-rd. (S), c., y.r. 75*l.*	1,400
Albert-ter., a plot of land, c., q.r. 13*l.*	330

February 25.—By JOHN BOTT & SONS.

Herne Hill.—193, Norwood-rd., u.t. 69 yrs., g.r. 6*l.* 6*s.*, p.	405

By COCKETT & HENDERSON.

Wanstead.—Sylvan-rd., Woodlands, f., p.	1,000

By C. W. DAVIES & SON.

Hoxton.—15, Alma-st., u.t. 33 yrs., g.r. 5*l.*, y.r. 38*l.*	335
31, Alma-st. and 1, Nile-st. (S), u.t. 33 yrs., g.r. 7*l.* 15*s.*, y.r. 53*l.* 12*s.*	420
31, Alma-st., u.t. 33 yrs., g.r. 5*l.* 5*s.*, y.r. 38*l.*	355
43 to 51 (odd) and 63, Alma-st., u.t. 33 yrs., g.r. 31*l.* 5*s.*, y.r. 216*l.*	1,970
Hackney.—5 and 7, Sylvester-rd. (S); also Cock Yard (stabling), f., y.r. 110*l.* 12*s.*	1,210
1 to 4, Grove-buildings, f., y.r. 128*l.*	1,470
Highbury.—145, Petherton-rd., u.t. 47½ yrs., g.r. 7*l.* 7*s.*, e.r. 70*l.*	650
50, Leigh-rd., u.t. 58 yrs., g.r. 9*l.*, e.r. 55*l.*	540
Harringay.—108, Seymour-rd., u.t. 94 yrs., g.r. 7*l.*, e.r. 42*l.*	420

By DEBENHAM, TEWSON, & CO.

Hampstead.—80, Fitzjohn's-av., area ½ an acre, f., p.	7,500

By FREDK. WARMAN.

Finsbury Park.—35, Woodberry-grove, u.t. 990 yrs., g.r. 16*l.* 5*s.*, e.r. 85*l.*	750
Highbury.—57, Leigh-rd., u.t. 57½ yrs., g.r. 10*l.*, e.r. 65*l.*	615

By FULLER, HORSEY, SONS, & CASSELL (on premises).

Esher, Surrey.—The Royal Mills (Esher Linoleum Company), area 12 a. 2 r. 38 p., f., p.	5,000

By Messrs. SPELMAN (at Gt. Yarmouth).

Great Yarmouth, Norfolk.—2, King-st. (o), f., p.	3,200
172, King-st. (s), f., y.r. 10*l.*	2,900

By J. HART, BRIDGES, & SONS (at Masons' Hall Tavern).

Southampton.—Melbourne-st, the Mill Tavern h.-h., area 2,150 ft., u.t. 442 yrs., g.r. 7*l.* 10*s.*, with goodwill	1,590

By G. LOVEITT & SONS (at Coventry).

Coventry, Warwick.—22 to 25, Cross Cheaping (s), and six tenements in rear, f., y.r. 249*l.* 2s. £4,750
19, Warwick-row, f., p. 590

By J. C. PLATT (at Hammersmith).

Hammersmith.—3, Bridge-av., u.t. 40½ yrs., g.r. 5*l.* 5s., e.r. 48*l.* 510
Kensington.—13 and 14, Porten-rd., u.t. 64 yrs., g.r. 16*l.*, w.r. 93*l.* 12s. 615

February 26.—By BROKETT & TAYLOR.

Weybridge, Surrey.—Windsor Walk, The Haven, u.t. 87 yrs., g.r. 17*l.* 10s., e.r. 80*l.* 700
Bloomsbury.—53, Gloucester-st., f., w.r. 123*l.* 10s. 1,090
Forest Gate.—13 and 15, Khedive-rd., u.t. 82½ yrs., g.r. 12*l.* 4s., e.r. 56*l.* 460

By DREW & SON.

Richmond, Surrey.—10, Larkfield-rd., u.t. 76½ yrs., g.r. 1*l.*, e.r. 50*l.* 515
St. Leonards-on-Sea, Sussex.—Shorndenter., l.g.r. 31*l.*, u.t. 69 yrs., g.r. 8*l.* 12s. 6d. 360
Deptford.—Watson-st., f.g.r. 4*l.*, reversion in 31½ yrs. 133

By DUNCAN & KIMPTON.

Clerkenwell.—36, Granville-sq., u.t. 51½ yrs., g.r. 9*l.*, r. 56*l.* 530

By G. GOULDSMITH, SON, & CO.

Pimlico.—Tachbrook-st., l.g.r.'s 222*l.*, u.t. 32 yrs., g.r. 35*l.*, with reversions from 2½ to 7½ yrs. (in lots) 3,005
78, Belgrave-rd., u.t. 35½ yrs., g.r. 10*l.*, p. 910
80 and 82, Belgrave-rd., u.t. 35½ yrs., g.r. 20*l.*, r. 200*l.* 1,850
35A, Charlwood-st., u.t. 35½ yrs., g.r. 2*l.*, y.r. 73*l.* 10s. 675
23, Moreton-pl., u.t. 26 yrs., g.r. 8*l.* 10s., y.r. 80*l.* 510
Belgravia.—8, Wilton-st., u.t. 19 yrs., g.r. 15*l.*, y.r. 230*l.* 1,920

By MORGAN, BAINES, & CLARK.

Norwood.—76 and 80, Central Hill, u.t. 50 yrs., g.r. 20*l.*, y.r. 202*l.* 1,600
Bexley Heath.—88, The Broadway, f., y.r. 32*l.* 400

By R. TIDEY & SON.

De Beauvoir Town.—19, Ardleigh-rd., u.t. 72 yrs., g.r. 6*l.* 10s., y.r. 40*l.* 300

February 27.—By ANSCOMBE & RINGLAND.

St. John's Wood.—26, Norfolk-rd., u.t. 33 yrs., g.r. 10*l.*, e.r. 65*l.* 460

By FARRERBROTHER, ELLIS, & CO.

Woolwich, Kent.—Harrington-rd., Trinity Wharf, area 25,800 ft., f., p.
Trinity-st., Jackson and Bentley's Wharf, area 7,700 ft., f., p. 2,300
Trinity-st., f.g.r. 10*l.*, reversion in 46 yrs. 900
345

By FIELD & SONS.

Southwark.—28 and 30, Southwark-st. (offices, warehouses, &c.), u.t. 41 yrs., g.r. 230*l.*, y.r. 690*l.* 1,100

February 27.—By HAMPTON & SONS.

Ealing.—Richmond-rd., Sunnyside and March Villa, f., y.r. 80*l.* 1,000
16 to 22 (even), Ranelagh-rd.; and 1, 2, and 3, Ranelagh-mews (stabling); also Rose Cottage, f., y.r. 254*l.* 16s. 3,000

By IZARD & IZARD.

Gunnersbury.—18, Silver-cres., u.t. 76½ yrs., g.r. 7*l.*, e.r. 45*l.* 473

By HERRING, SON, & DAW.

Silvertown.—Tate-rd., f.g.r. 52*l.*, reversion in 98 yrs. 1,170
[Muir-st., f.g.r. 28*l.*, reversion in 98 yrs. 640

By C. C. & T. MOORE.

Stratford.—46 to 54 (even), Vicarage-l., u.t. 26½ yrs., g.r. 12*l.* 10s. 6d., w.r. 104*l.* 670
Forest Gate.—Atherton-rd., a freehold building site, area 3,550 ft., p. 185
37 to 43 (odd), Haslemere-rd., u.t. 87½ yrs., g.r. 5*l.* 5s., w.r. 123*l.* 10s. 780
Hackney.—18, Gloucester-rd., u.t. 44 yrs., g.r. 10s., y.r. 45*l.* 583

By NOTT, CARTWRIGHT, & ETCHES.

Notting Hill.—141, 143, and 145, Portobello-rd. (s), u.t. 49 yrs., g.r. 24*l.*, y.r. 130*l.* 1,610

By RAMSAY, WAINWRIGHT, & CO.

Crouch Hill.—87, Shaftesbury-rd., u.t. 73 yrs., g.r. 7*l.* 10s., y.r. 44*l.* 440
Stroud Green.—1, Carlton-rd., u.t. 74½ yrs., g.r. 8*l.* 10s., e.r. 48*l.* 450

By STIMSON & SONS.

Lincoln's Inn Fields.—Gate-st., The Sun p.-h., l.g.r. 100*l.*, reversion in 18½ yrs. 3,450
Forest Gate.—70 to 76 (even), Studley-rd., f., w.r. 104*l.* 1,160
Old Kent-rd.—19 to 25 (odd), Tustin-st., u.t. 91 yrs., g.r. 18*l.*, w.r. 104*l.* 210
Regent's Park.—137, Albany-st. (S), u.t. 13½ yrs., g.r. 15*l.*, y.r. 60*l.* 320
165, Albany-st. (S), u.t. 13½ yrs., g.r. 21*l.*, y.r. 35*l.* 240
Thornton Heath, Surrey.—6 and 8, Farnham-rd., f., y.r. 59*l.* 4s. 580

By FULLER, MOON, & FULLER (at Croydon).

Croydon.—16, Campbell-rd., f., y.r. 40*l.* 710
18, Campbell-rd., f., e.r. 50*l.* 575
29, St. Peter's-rd., f., e.r. 52*l.* 10s. 705

February 28.—By BURTON, Smith, & CO.

Streatham.—80 and 81, Barrow-rd., u.t. 81 yrs., g.r. 10*l.*, y.r. 93*l.* 975

By C. RAWLEY CROSS & CO.

Kensington.—17, Cromwell-gr., u.t. 74½ yrs., g.r. 6*l.*, e.r. 55*l.* 540
Acton.—19, Willcott-rd., u.t. 96 yrs., g.r. 7*l.* 10s., y.r. 42*l.* 450
Ealing.—Blandford-rd., the Hollies, f., y.r. 34*l.* 430
Blandford-rd., The Ferns, with yard and stabling in rear, f., y.r. 49*l.* 640

By G. GERRETT & CO.

Norwood.—44 to 52 (even), Manor Park-rd., u.t. 87 yrs., g.r. 30*l.*, w.r. 136*l.* 1,375
43 and 47, Albert-rd., u.t. 63 yrs., g.r. 12*l.*, w.r. 61*l.* 16s. 435
4, Sunnybank, u.t. 59 yrs., g.r. 6*l.*, y.r. 50*l.* 290

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.		
Hard Stocks	1 11 6	per 1,000 alongside, in river.	
Rough Stocks and Grizzles	1 9 6	,,	,, ,,
Facing Stocks	2 12 0	,,	,, ,,
Shippers	2 5 0	,,	,, ,,
Flettons	1 8 0	,,	,, ,,
Red Wire Cuts ..	1 12 0	,,	at railway depôt.
Best Fareham Red	3 12 0	,,	,, ,,
Best Red Pressed Ruabon Facing.	5 5 0	,,	,, ,,
Best Blue Pressed Staffordshire ..	4 6 6	,,	,, ,,
Do., Bullnose	4 10 0	,,	,, ,,
Best Stourbridge Fire Bricks	4 5 6	,,	,, ,,

GLAZED BRICKS

Best White and Ivory Glazed Stretchers.....	23 0 0	,,	,, ,,
Headers	18 0 0	,,	,, ,,
Quoins, Bullnose, and Flats	17 0 0	,,	,, ,,
Double Stretchers	19 0 0	,,	,, ,,
Double Headers..	16 0 0	,,	,, ,,
One Side and two Ends	19 0 0	,,	,, ,,
Two Sides and one End	20 0 0	,,	,, ,,
Splays, Chamfered, Squints.....	20 0 0	,,	,, ,,
Best Dipped Salt Glazed Stretchers and Headers ..	12 0 0	,,	,, ,,
Quoins, Bullnose, and Flats	14 0 0	,,	,, ,,
Double Stretchers	15 0 0	,,	,, ,,
Double Headers..	14 0 0	,,	,, ,,
One Side and two Ends	15 0 0	,,	,, ,,
Two Sides and one End	15 0 0	,,	,, ,,
Splays, Chamfered, Squints.....	14 0 0	,,	,, ,,
Seconds Quality White and Dipped Salt Glazed	2 0 0	,,	less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	,, ,,
Best Portland Cement	32 0	per ton, delivered.
Best Ground Blue Lias Lime..	25 0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....	11s. 0d. per yard, delivered.
Stourbridge Fire-clay in sacks, 26s. 6d. per ton at rly. dpt.	

STONE.

	s. d.		
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.	
Bath ,, ...	1 7	,,	,,
Farleigh Down Bath ..	1 8	,,	,,
Beer in blocks	1 6	,,	,,
Grinshill ,, ...	1 10	,,	,,
Brown Portland in blocks	2 2	,,	,,
Darley Dale in blocks..	2 4	,,	,,
Red Corsehill ,,	2 5	,,	,,
Closeburn Red Freestone	2 3	,,	,,
Red Mansfield ,,	2 4	,,	,,
Hard York in blocks ..	2 10	,,	,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2 8	per ft. super. at rly. depôt.	
,, ,, 6 in. Rubbed Ditto..	3 0	,,	,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1 3	,,	,,
,, ,, 2 in. self-faced Ditto	0 9½	,,	,,
Hearth Wood (Hard Bed) in blocks	2	3 per ft. cube. deld. rly. depôt.	
,, ,, 6 in. sawn both sides landings	2	7 per ft. super. deld. rly. depôt.	
,, ,, ,, 3 in. do.	2	2½ ,,	,,

SLATES.

in.	in.	£ s. d.		
20×10	best blue Bangor..	12 0 0	per 1000 of 1200 at rly. dep.	
,,	best seconds ,,	11 10 0	,,	,,
16× 8	best ,,	6 15 0	,,	,,
20×10	best blue Portmadoc ..	11 5 0	,,	,,
16× 8	best blue Portmadoc	6 0 0	,,	,,
20×10	best Eureka unfading green....	12 2 6	,,	,,
16× 8	,, ,,	7 5 0	,,	,,
20×10	permanent green	10 5 0	,,	,,
16× 8	,, ,,	5 17 6	,,	,,

TILES.

	s. d.	
Best plain red roofing tiles..41	6	per 1,000, at rly. depôt.
Hip and valley tiles.... 3	7	per doz. ,, ,,
Best Broseley tiles 48	6	per 1,000 ,, ,,
Hip and valley tiles.... 4	0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards) 57	6	per 1,000 ,, ,,
Do. ornamental Do. 60	0	,, ,, ,,
Hip tiles 4	0	per doz. ,, ,,
Valley tiles 3	9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes) . 50	9	per 1,000 ,, ,,
Hip tiles 4	1	per doz. ,, ,,
Valley tiles..... 3	8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	14 10 0	16 0 0	
Deals: best 3 by 9.....	13 10 0	15 0 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	10 10 0	11 10 0	

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £ s. d.	£ s. d.	
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best	
Battens: seconds	0 10 0	,, ,, ,,	
2 in. by 4 in. and 2 in. by 6 in. ..	8 10 0	9 10 0	
1¼in. by 4½ in. and 2 in by 5 in. ..	8 0 0	9 0 0	
Foreign Sawn Boards—			
1 in. by 12 in. by 12 in.	0 10 0	more than battens.	
¾ in.	1 0 0	,,	
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0	
Seconds	4 5 0	4 10 0	
Small timber (8 in. to 10 in.)	3 12 6	3 15 0	
Swedish balks.....	2 15 0	3 0 0	
Pitch-pine timber (50 ft.).....	3 0 0	3 10 0	
JOINERS' WOOD.	At per standard.		
White Sea: First yellow deals, 3 in. by 11 in.	22 0 0	23 0 0	
3 in. by 9 in.	20 0 0	21 0 0	
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0	
Second yellow deals, 3 in. by 11 in.	18 0 0	20 0 0	
,, ,, 3 in. by 9 in.	16 10 0	18 10 0	
Battens, 2½ in. and 3 in. by 7 in.	13 0 0	14 0 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0	15 10 0	
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0	
Petersburg: first yellow deals, 3 in. by 11 in.	20 0 0	21 0 0	
Do. 3 in. by 9 in.	17 0 0	18 0 0	
Battens.....	13 0 0	14 0 0	
Second yellow deals, 3 in. by 11 in.....	15 0 0	16 10 0	
Do. 3 in. by 9 in.	13 10 0	14 10 0	
Battens.....	11 0 0	12 0 0	
Third yellow deals, 3 in. by 11 in.....	12 10 0	13 10 0	
Do. 3 in. by 9 in.	12 0 0	13 0 0	
Battens.....	10 0 0	11 0 0	
White Sea and Petersburg:—			
First white deals, 3 in. by 11 in.	14 0 0	15 0 0	
,, ,, ,, 3 in. by 9 in.	13 0 0	14 0 0	
Battens.....	11 0 0	12 0 0	
Second white deals 3 in. by 11 in.	13 0 0	14 0 0	
,, ,, ,, 3 in. by 9 in.	12 0 0	13 0 0	
,, ,, ,, battens.....	9 10 0	10 10 0	
Pitch-pine: deals	16 0 0	18 0 0	
Under 2 in. thick extra	0 10 0	1 0 0	
Yellow Pine—First, regular sizes..	32 0 0	33 10 0	
Broads (12 in. and up).....	2 0 0	more.	
Oddments	22 0 0	24 0 0	
Seconds, regular sizes	24 10 0	26 10 0	
Yellow Pine Oddments	20 0 0	22 0 0	
Kauri Pine—Planks, per ft. cube..	0 3 6	0 4 6	
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 0	
Small ,, ,, ...	0 2 3	0 2 6	
Wainscot Oak Logs, per ft. cube ..	0 5 0	0 5 6	
Dry Wainscot Oak, per ft. sup. as inch	0 0 7½	0 0 8	
¾ in. do. do.	0 0 7	- - -	
Dry Mahogany—			
Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11	
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0	
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0	
Teak, per load	16 0 0	20 0 0	
American Whitewood Planks—			
Per ft. cube.....	0 3 0	0 3 6	
Prepared Flooring—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 0	0 16 6	
1 in. by 7 in. yellow, planed and matched	0 13 6	0 17	
1¼ in. by 7 in. yellow, planed and matched	0 15 0	1 0 0	
6 in. at 6d. per square less than 7 in.			
1 in. by 7 in. white, planed and shot	0 11 0	0 12 6	
1 in. by 7 in. white, planed and matched	0 11 6	0 13 6	
1¼ in. by 7 in. white, planed and matched	0 13 6	0 15 6	
6 in. at 6d. per square less than 7 in.			

JOISTS, GIRDERS, &c.

	In London, or delivered £ s. d.	Railway Vans, per ton. £ s. d.	
Rolled Steel Joists, ordinary sections	6 2 6	7 2 6	
Compound Girders ,, ,,	7 17 6	8 17 6	
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6	
Flitch Plates	8 5 0	8 15 0	
Cast Iron Columns and Stanchions, including ordinary patterns	7 0 0	8 0 0	

METALS.

	Per ton, in London. £ s. d.	£ s. d.	
IRON—			
Common Bars.....	8 0 0	8 10 0	
Staffordshire Crown Bars, good merchant quality	8 10 0	9 0 0	
Staffordshire "Marked Bars" ..	10 10 0	- - -	
Mild Steel Bars.....	9 0 0	9 10 0	
Hoop Iron, basis price.....	9 5 0	9 15 0	
,, ,, galvanised.....	16 0 0	- - -	
(* And upwards, according to size and gauge.)			
Sheet Iron, Black.—			
Ordinary sizes to 20 g.....	10 0 0	- - -	
,, ,, to 24 g.....	11 0 0	- - -	
,, ,, to 26 g.....	12 10 0	- - -	
Sheet Iron, Galvanised, flat, ordinary quality.—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12 10 0	- - -	
,, ,, 22 g. and 24 g.	13 0 0	- - -	
,, ,, 26 g.....	14 0 0	- - -	
Sheet Iron, Galvanised, flat, best quality:—			
Ordinary sizes to 20 g.....	16 10 0	- - -	
,, ,, 22 g. and 24 g.	17 0 0	- - -	
,, ,, 26 g.....	18 10 0	- - -	

[See also page 251.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Proposed Public Offices	Aldershot U.D.C.	100*l.*, 75*l.*, and 50*l.*	Mar. 29
Twenty-five Houses	Coleraine (Ireland) U.D.C.	20*l.* and 10*l.*	April 21
*Market Hall and Shops	Oldham Corporation	50*l.*, 30*l.*, 20*l.*	May 6

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Supply of Articles and Execution of Works	Stepney Borough Council	Council's Engineer, 15, Great Alie-street, Whitechapel, E.	Mar. 10
*Supply of Railway Wagons	Cambrian Railways Company	Locomotive, &c., Superintendent, Oswestry	Mar. 11
Additions to Farm House, Dalgaty, N.B.	Annfield Plain U.D.C.	J. Duncan & Son, Architects, Turriff	do.
Street Works, Back Langley-terrace, &c.		T. J. Trowsdale, Surveyor, Annfield Plain	do.
Warehouse, Ardmore Distillery, Kennethmont, N.B.	West Bromwich Town Council	C. C. Doig, Architect, Elgin	do.
Sewage Outfall Works, Friar Park		A. D. Greatorex, Civil Engineer, Town Hall West Bromwich	do.
Additions to the Station Hotel, Horsham		W. Buck, Architect, Horsham	do.
House, Northland-road, Londonderry	Ogmore & Garw U.D.C.	R. R. Buchanan, Architect, Castle-street, Londonderry	do.
Public Offices, &c., Abergarw	Bridgwater Town Council	S. H. Stockwood, Post Office Buildings, Bridgend	do.
Additions to 65, St. John-street	Mr. G. Colley	W. T. Baker, High-street, Bridgwater	do.
Additions to House and Shop, Prince-st., Bridlington	Rawmarsh U.D.C.	J. Earnshaw, Architect, Wellington-road, Bridlington	do.
Street Works, Fitzwilliam-street, &c.	Fulham Borough Council	W. J. Petch, Surveyor, Council Offices, Rawmarsh	do.
*Filling-up and Levelling Meadow	Edmonton U.D.C.	Council's Surveyor, Town Hall, Fulham, S.W.	do.
*Stoneware Pipes		G. Eedes Eachus, Town Hall, Edmonton	do.
Street Works, Stepney-lane, Hull	Hull Corporation	E. Whitlock, Architect, 26, Scale-lane, Hull	Mar. 12
House, Donovan Estate, Cork		W. H. Hill & Son, Architects, 28, 8 uth Mall, Cork	do.
Lodge, West Park	Whiston R.D.C.	J. H. Hirst, City Surveyor, Town Hall, Hull	do.
Alterations to the Golden Lion Hotel, Kendal	Waterloo Mill Company	J. Stalker, Architect, 57, Highgate, Kendal	do.
Surveyor's Materials, Prescot, Lancs	Dumbarton County Council	W. Goldsworth, Surveyor, Delph-lane Offices, Whiston	do.
Rebuilding Mill, Padsey	Warrington Corporation	Kendall & Bakes, Architects, Victoria-square, Leeds	do.
Road Metal, &c., Glasgow	Gosport U.D.C.	H. Hutcheson, 113, Wellington-street, Glasgow	do.
House, &c.	St. Helen's (Lancs) Town Council	T. Beasley, Architect, 28, Bold-street, Warrington	do.
Wrought Iron Railings	Northwich R.D.C.	H. Frost, Surveyor, Town Hall, Gosport	do.
Reservoir, Brown Edge	Mr. W. Tremble	J. J. Lacklang, Engineer, Town Hall, St. Helen's	do.
Road Works	Kingston-on-Thames	A. Fletcher, 16, Winnington-street, Northwich	do.
Additions to House, Stabling, &c., Burgh-by-Sands	Uxbridge and Hillingdon Gas Co.	Johnstone Bros. Architects, Carlisle	do.
*Road Repairing	Lewisham Borough Council	Borough Surveyor, Clattern House, Kingston-on-Thames	do.
*Concrete Foundation		The Engineer, Gas Works, Uxbridge	do.
*Annual Contracts		Council's Surveyor, Town Hall, Catford	do.
Schoolroom, Barnby Beccles	Clones (Ireland) Guardians	R. S. Cockrill, Architect, Crossley House, Lowestoft	Mar. 13
Chapel, Hopkinstown, Wales	Stratford-on-Avon Guardians	A. O. Evans, Architect, Pontypridd	do.
Creamery, Tobercurry, Ireland	Clare (Suffolk) R.D.C.	J. Donohoe, Tobercurry	do.
Alterations to Hospital	Borough of Camberwell	R. Clarke, Workhouse, Clones	do.
Infirmary	Metropolitan Asylums Board	C. Smith & Son, Architects, 164, Friar-street, Reading	do.
Granite Road Metal (2,000 tons)	do.	W. H. Carr, Surveyor, Clare, Suffolk	do.
*Making-up South Croxted-road, Dulwich		W. Oxtoby, Town Hall, Camberwell	do.
*Painting & Cleaning, Western Fever Hospital, Fulham	Chelmsford R.D.C.	Office of the Board, Embankment, E.C.	do.
*Visitor's Room at Grove Hospital, Tooting	Mr. J. Price	do.	do.
Two Cottages, Pilton-street, Pilton	The Fife Coal Company, Limited	J. Thomas, Bull Hill, Pilton	Mar. 14
Works at Wesleyan Chapel, Aberayron, Wales		Rev. J. Lloyd, Greenland-terrace, Aberayron	do.
Water Supply Works, Danbury, Essex	Westmoreland R.D.C.	J. Dewhurst, Engineer, Avenue Chambers, Chelmsford	do.
Hotel, Bisengarw		P. J. Thomas, Architect, Bridgend	Mar. 15
Twenty Houses, Blairadam, N.B.	Stafford R.D.C.	Secretary, Fife Coal Company, Bowdenbeath	do.
Additions to 38, Regent-street, Swindon	Riccall R.D.C.	R. J. Beswick, Architect, 35, Regent-street, Swindon	do.
Bridge Works, Arnside		E. Dobson, Jasmine Cottage, Milnthorpe	do.
Schools, Llanymynech, Wales	Radcliffe U.D.C.	Rev. G. O. Evans, Gardd, Llanymynech	do.
Granite Road Metal	Trustees	W. Morgan, 4, Martin-street, Stafford	do.
Surveyor's Materials, near Selby	Bridlington Corporation	E. Townsend, 1, Abbey-place, Selby	do.
Cottage, Longtown, Cumberland	Mr. Hunter	J. J. Millican, Park Gate, Springfield, Graitney	do.
Engine House, &c., Dale-street	Messrs. G. Whitley & Son	W. L. Rothwell, Engineer, Council Offices, Radcliffe	do.
Restoration of Chapel, North Burton	Chelmsford R.D.C.	S. Dyer, Architect, Bridlington Quay	do.
Road Metal (1,400 tons)	Sculcoates R.D.C.	A. E. Matthewman, Town Hall	do.
Additions to 198, Regent-street, Swindon	Haddington County Council	R. J. Beswick, Architect, Regent-street, Swindon	do.
Bakehouse, Shops, &c., Horton-street, Halifax	Hornsey U.D.C.	Walsh & Nicholas, Architects, Museum Chambers, Halifax	Mar. 17
Boring, Great Baddow	Manchester Corporation	J. Dewhurst, Engineer, Avenue Chambers, Chelmsford	do.
Road Metal, Hessle, Hull	Trustees of Wardwood's Charity	A. Greaves, Surveyor, Hessle	do.
Water Supply Works, Prestonpans, N.B.	Sevenoaks U.D.C.	J. D. Watson, Council Offices, Haddington	do.
*700 feet 9 inches Stoneware Pipe Sewer, &c.		E. J. Lovegrove, Southwood-lane, Highgate	do.
*Steel and Ironwork for Electric Car Shed	Mr. J. F. Jones	J. M. McElroy, 55, Piccadilly, Manchester	do.
Alterations to Cottages, Farm Buildings, &c. Aylesbury	Trustees of Sayo & Sele Charity	F. Taylor, 26, Temple-street, Aylesbury	do.
Street Works	Tutbury R.D.C.	Jabez Mann, Civil Engineer, Council Offices, Sevenoaks	do.
Church, Waunllwyd	Kirkheaton U.D.C.	J. Phillips, Cwm-road, Waunllwyd	do.
Twenty-six Cottages, Ebbw Vale, Mon.	Weardale Water Company	B. J. Francis, Architect, Abergavenny	do.
Additions to School, Quainton	Southgate U.D.C.	T. Taylor, Architect, 26, Temple-street, Aylesbury	do.
Granite Road Metal, near Burton-on-Trent	do.	H. S. Tebbitt, 320, Shobnall-street, Burton-on-Trent	do.
Drainage Works	do.	Marriott & Son, Civil Engineers, Church-st. Chambers, Dewsbury	do.
Cottage, Meadowfield, near Durham	Rushden (Northants) U.D.C.	Askwith, Civil Engineer, South-road, Bishop Auckland	do.
*Annual Contracts	Hornsey U.D.C.	C. G. Lawson, Council Offices, Palmer's Green, N.	Mar. 18
*Rolled Steel Joists	Tottenham U.D.C.	do.	do.
*2,500 yards Sewers	Fulham Borough Council	do.	do.
Granite Road Metal	Wallsend Town Council	W. B. Madin, Engineer, Vestry Hall, Rushden, Northants	do.
*Repairing Roads	Lambeth Borough Council	E. J. Lovegrove, Southwood-lane, Highgate, N.	do.
Farmhouse, Ffynonwen, Wales	Roscommon (Ireland) R.D.C.	D. T. Lane, Surveyor, Wheat-street, Brecon	do.
*Making-up Roads	Kent County Council	W. H. Prescott, 712, High-road, Tottenham	do.
*Making-up and Paving Street	Epsom U.D.C.	Council's Surveyor, Town Hall, Walham Green, S.W.	Mar. 19
Refuse Destructor	London County Council	G. Hollings, Borough Surveyor, Wallsend	do.
*Disinfecting Chamber, &c.	Metropolitan Asylums Board	H. Edwards, Town Hall, Kennington Green, S.E.	Mar. 20
Foundations, &c., Parkside Asylum, Macclesfield	Cuckfield R.D.C.	H. Beswick, County Architect, Newgate-street, Chester	Mar. 22
Water Supply Works	Ilkeston Water Board	T. T. O'Keeffe, Council Offices, Roscommon	do.
*Maintenance and Repair of Main Roads for 3 years	Essex County Council	County Surveyor, 86, Week-street, Maidstone	Mar. 24
*Additions, &c., to Isolation Hospital	Great Harwood (Lancs) U.D.C.	Council's Surveyor, Bromley Hurst, Church-street, Epsom	do.
*Ottawa and Baffin Buildings, Prestons-road, Poplar	Great Harwood U.D.C.	Architect's Department, Housing Branch, 18, Pall Mall East, S.W.	Mar. 25
*Fence-Wall at North-Eastern Hospital	Brentford Union	A. & C. Harston, Architects, 15, Leadenhall-street, E.C.	Mar. 26
*Making-up, &c., Woodlands-road, Hassocks	West Ham Borough Council	E. Waugh, Boltro-road, Haywards Heath	do.
Pumping Station	Holborn Union	G. & F. Hodson, Engineers, Town Hall, Ilkeston	Mar. 27
*New Bridge, Sutton Ford, near Rochford	Royal Borough of Kensington	County Offices, Duke-street, Chelmsford	do.
Surveyors' Materials	Hereford Town Council	A. H. Dunkin, Surveyor, Town Hall, Great Harwood	Mar. 29
Slaughter Houses, Wood and Balfour Streets	Stratford-on-Avon Union	do.	do.
*Percy House Schools, Isleworth		W. H. Ward, Paradise-street, Birmingham	April 1
*Public Library, Plaistow	Broughty Ferry (N.B.) T.C.	Town Clerk, Town Hall, West Ham, E.	do.
*Hot-Water Heating, &c.	Bradford Dyers' Association	J. A. Battersby, Guardians' Offices, Clerkenwell-road, E.C.	April 2
*385 feet of 12-inch Pipe Sewer	South Westmoreland R.D.C.	Borough Engineer, Town Hall, High-street, Kensington, W	April 7
*Municipal Buildings	Longtown (Herefdsh') U.D. Sc. Bd.	H. A. Cheers, Architect, Twickenham, W.	No date
*New Infirmary for Women		C. Smith & Son, Architects, 164, Friar-street, Reading	do.
*Additions to Schools, Potters-road, New Barnet		F. Child, Surveyor, 65, Chancery-lane, W.C.	do.
Additions to "The Priory," Headingley		Danby & Simpson, Architects, 10, Park-row, Leeds	do.
Roof at Gasworks		F. Waddell, Engineer, Council Offices, Broughty Ferry	do.
Shed, &c., Hunsworth, Yorks		Engineer, 39, Well-street, Bradford	do.
Factory, Leyton, Essex		W. H. Newall, 25, Brampton-road, N.E.	do.
Bridge Works, Kentmere		J. Bintley, Engineer, 7, Lowther-street, Kendal	do.
Church, Standishgate, Wigan		F. W. Dixon, Architect, Trevelyan Buildings, Manchester	do.
House		E. A. Johnson, Architect, Abergavenny	do.

[See also next page.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Required.	Salary.	Application to be in
*Chief Draughtsman	Aberdeen School Board	120*l.*	Mar. 14
*Assistant Road Foreman	Ealing Borough Council	40*s.* per week	Mar. 22
*Architectural Assistant	Borough of Hampstead	4*l.* 4*s.* per week	No date

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. viii. x. xii. & xx. Public Appointments, xvii. xviii. & xx.

PRICES CURRENT (*Continued*).

METALS.

	Per ton, in London					
	£	s.	d.	£	s.	d.
IRON—						
Galvanised Corrugated Sheets.—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12	10	0	.	.	.
,, ,, 22 g. and 24 g.	13	0	0	.	.	.
,, ,, 26 g.	14	0	0	.	.	.
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12	5	0	.	.	.
,, ,, 22 g. and 24 g.	13	5	0	.	.	.
,, ,, 26 g.	14	5	0	.	.	.
Cut nails, 3 in. to 6 in.	9	10	0	10	0	0
(Under 3 in. usual trade extras.)						

LEAD, &c.

	Per ton, in London.					
	£	s.	d.	£	s.	d.
LEAD—Sheet, English, 3 lbs. & up.	14	5	0	.	.	.
Pipe in coils	14	15	0	.	.	.
Soil Pipe	17	5	0	.	.	.
ZINC—Sheet—						
Vieille Montagne ton	24	10	0	.	.	.
Silesian	24	0	0	.	.	.
COPPER—						
Strong Sheet per lb.	0	1	0	.	.	.
Thin ,,	0	1	1½	.	.	.
Copper nails ,,	0	1	1½	.	.	.
BRASS—						
Strong Sheet ,,	0	0	11	.	.	.
Thin ,, ,,	0	1	1	.	.	.
TIN—English Ingots ,,	0	1	3	.	.	.
SOLDER—Plumbers' ,,	0	0	6½	.	.	.
Tinmen's ,,	0	0	8	.	.	.
Blowpipe ,,	0	0	9	.	.	.

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	2¾d. ,, ,,
21 oz. thirds	3½d. ,, ,,
,, fourths	3d. ,, ,,
26 oz. thirds	4½d. ,, ,,
,, fourths	4d. ,, ,,
32 oz. thirds	5½d. ,, ,,
,, fourths	5d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, ,, 21 ,,	4d. ,, ,,
¼ Hartley's Rolled Plate	2d. ,, ,,
⅜ ,, ,, ,,	2½d. ,, ,,
½ ,, ,, ,,	2¾d. ,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	4
,, ,, ,, in barrels	,,	0	2	10
,, ,, ,, in drums	,,	0	3	0
Boiled ,, ,, in pipes	,,	0	2	11
,, ,, ,, in barrels	,,	0	3	0
,, ,, ,, in drums	,,	0	3	2
Turpentine, in barrels	,,	0	2	6
,, in drums	,,	0	2	8
Genuine Ground English White Lead	per ton	21	0	0
Red Lead, Dry	,,	20	10	0
Best Linseed Oil Putty	per cwt.	0	1	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon.		
	£	s.	d.
Fine Elastic Copal Varnish for outside work	0	16	6
Best Elastic Copal Varnish for outside work	1	0	0
Best Elastic Carriage Varnish for outside work	0	16	0
Best Hard Oak Varnish for inside work	0	10	6
Best Extra Hard Church Oak Varnish for inside work	0	10	6
Fine Hard Copal Varnish for inside work	0	16	0
Best Hard Copal Varnish for inside work	1	0	0
Best Hard Carriage Varnish for inside work	0	16	0
Extra Pale Paper Varnish	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
Best French and Brush Polish	0	10	0

TO CORRESPONDENTS.

J. A. S. (We cannot print your letter.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BANDON (Ireland).—For the erection of a dwelling-house, for Mr. H. Harte. Messrs. W. H. Hill & Son, architects, 28, South Mall, Cork:—
Daniel Murphy, Market-street, Bandon, Cork* £550

BIRMINGHAM.—For rebuilding Waterworks Tavern, Birmingham, for Messrs. Truman, Hanbury, Buxton & Co., Ltd. Mr. Charles Hook Collett, architect. Quantities by Mr. Henry Clover:—

Whitehouse & Sons	£3,350	Turton	£3,143
Moorhouse	3,204	Harvey Gibbs	2,921
Gowing & Ingram	3,175	Morris*	2,849
Lee & Son	3,150		

BREWOOD (Staffs).—For reseating the nave of the parish church in oak. Mr. Ashton Veall, architect, Wolverhampton:—
Hatch & Sons, Lancaster* £558
[Twenty-six tenders received, from £340 to £1,300.]

CARDIFF.—For additions to kitchens and larders at the Cardiff Infirmary. Mr. Edwin Seward, architect, Cardiff:—
F. Small, Edward's-place, Cardiff* .. £453 9 4

CHISWICK.—For extension of carriage factory, Chiswick, W.; for Henry Whitlock, Ltd. Mr. T. Wilson, architect, 34, New Bridge-street, E.C.:—
L. L. Leeder & Co.* £1,397

ELLON (N.B.)—For the erection of a house, Craigs of Auchterellon, for Mr. Thomas Mair. Mr. W. Davidson, architect:—

Masonry.—Andrew Smith*	£397 10
Carpentry.—W. Auld*	258 0
Slating.—W. Fyvie*	67 15
Plastering.—W. Givewright*	94 7
Plumbing.—Alex. Gibb*	85 10
	£896 2

[All of Ellon.]

GRIMSBY.—For the erection of five houses with shops, restaurant, stabling, and bakehouse, Cleethorpes, for Messrs. R. S. & C. Osborne. Mr. E. E. Bentley, architect, 1, Pelham Chambers, Old Market Place, Grimsby:—
Wm. Ion, Cleethorpes* £5,807

HALIFAX.—For the erection of a store shed at tram depot, Gibbet-street, for the Corporation. Mr. Jas. Lord, C.E., Town Hall, Halifax:—

Masonry.—Naylor & Sons, Halifax*	£117 2 0
Joinery.—Greenwood & Son, Halifax*	29 16 11
Slating and Plastering.—Bancroft & Son, Halifax*	17 14 3
Plumbing and Glazing.—S. S. Thompson, Halifax*	4 14 0

HUNSTANTON.—For new stables, &c. the Glebe Hotel, Hunstanton. Mr. Herbert J. Green, architect and surveyor, Norwich:—

W. H. Brown	£1,719 0 0	Reuben Shanks	£1,304 0 0
W. Sindall	1,515 0 0	W. Saint	1,384 0 0
John Cracknell	1,419 0 0	A. F. Foreman	1,370 12 0
Chambers & Sons	1,471 6 3	F. Giddings, St. Ives, Hunts†	1,338 0 7

LONDON.—For extension of stables, England's-lane, Hampstead, for J. Richards, Ltd. Mr. T. Wilson, architect, 34, New Bridge-street, E.C.:—

Thompson	£499	Pugh	£447
Pearson	475	Williams*	490
Littlewood	473		

LONDON.—For building house in Upper Tooting Park, Trinity-road, Upper Tooting, S.W. Mr. W. Hunt, architect and surveyor, Norfolk-street Strand:—
W. & C. Brown, Wandsworth Common, S.W. £1,075

LONDON.—For the erection of detached residence in Hendon-avenue on the Grass Park estate, Church End, Finchley, for Mr. J. J. Bridgewater. Mr. Walter Bennett, architect, Church End, Finchley, N. Quantities by Mr. William Hawker, 73, Moorgate-street, E.C.:—

Freeman & Barber	£3,500	Coulsell Bros.	£2,763
Jesse Phœnix	2,938	W. Tout	2,825
Gough & Co.*	2,934		

[Architect's estimate, £2,800.]

MALTON (Yorks).—For the execution of water supply works, Welburn, for the Malton Rural District Council. Mr. R. Richardson, C.E., Town Hall, Malton. Quantities by Engineer:—

Reservoir.
Anthony Lyons, Norton, Malton £135 7 0

Excavator's Work.
Jos. Morgan, Conrysthorpe, Malton .. £65 0 0

Collecting Works and Pumping Station.
Jos. Morgan, Conrysthorpe, Malton .. £73 15 0

Pipes.
J. & R. Ritchie, Middlesbro' £78 6 3

Fittings and Plumber's Work.
Thos. Leefe, Malton £188 13 4½

Pumping Machinery.
Geo. Harrison & Co., Ripon £168 17 0

£935 18 7½
Estimate 945 0 9

SNETTISHAM.—For new house at Snettisham, Norfolk, for Mr. E. Lambert. Mr. Herbert J. Green, architect and Surveyor, Norwich:—

Chilvers & Son	£1,503 10 4	Reuben Shanks	£1,164 0 0
F. Giddings	1,292 0 0	G. Southgate, Hunstanton†	1,042 0 0
Chambers & Son	1,285 0 0		

WALLINGTON (Surrey).‡—For the construction of about one mile of new roads, with sewers, soakaways, &c., complete, on the Little Woodcote Estate, for the Imperial Property Investment Co., Ltd. Mr. W. J. Parker, surveyor, 38, Great James-street, Bedford-row, W.C.:—

J. Dunmore	£7,459	F. Cottrell	£5,785
Neave & Son	6,964	T. Adams	5,772

‡ The list published last week was an unauthorised one, and appears to have been incorrect.—ED.

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's Architect:—

* *Recommended for acceptance.*

HACKNEY (Mowlem-street).—Enlargement: Boys' and girls', 100. Classrooms: Boys', 50; girls', 50. Additional cloakrooms and lavatories for boys and girls, providing infant teachers' room and girls' staircase, and stockrooms for boys and girls:—

McCormick & Sons	£3,398	Chessum & Sons	£3,026
Grover & Son	3,256	Willmott & Sons	3,019
Leslie & Co., Ltd.	3,151	Williams & Son	3,015
T. L. Green	3,147	W. Shurmur	2,987
Gregar & Son	3,135	F. & F. J. Wood	2,985
Clarke & Bracey	3,115	L. H. & R. Roberts	2,984
Snewin Bros. & Co.	3,080	Lawrance & Sons	2,911
Staines & Son	3,056	C. Cox*	2,910
Treasure & Son	3,041		

Structural alterations and repairs to buildings.

SAFFRON-HILL (Finsbury).—Removing the defective zinc covering and gutters to roof over Artroom and replacing them with new material [second competition]:—

W. Hornett	£184 0	General Builders, Ltd.	123 0
T. L. Green	143 0	Stevens Bros.*	118 0
Vigor & Co.	138 10	Chinchen & Co.	45 10
Marchant & Hirst	125 0		

MARYLEBONE (Kentish Town-road).—Executing alterations in drainage and sanitary arrangements; providing new stoves; also minor repairs and cleaning and painting throughout. [Second competition].

E. Triggs	£490 0	M. Pearson	£410 0
Stevens Bros.	479 0	F. Chidley*	325 6
Marchant & Hirst	465 0		

[*See also next page.*

* TOWER HAMLETS (Hanbury-street). — Altering position of boys' entrance doorway, in order to obviate passing through the schoolroom, as at present; including new fixed glazed framing to form passage and lobby in connexion therewith :—

Gibb & Co.	£297 0	J. F. Holliday	£212 0
T. H. Jackson	274 10	G. Barker	205 0
A. E. Symes	245 0	A. J. Sheffield	190 0
Johnson & Co.	241 0	F. & F. J. Wood *	190 0

Cleaning and painting.

Unless where otherwise stated, the interior work at the following schools will be carried out between March 8 and April 5, 1902, and the exterior work between March 8 and April 12, 1902 :—

CHELSEA (Oxford-gardens).—Painting exterior and cleaning interior (old portion) :—

G. H. Sealey	£308 0	C. Gurling	£171 0
C. Curd	207 0	G. Neal	167 10
F. Chidley	179 10	W. Chappell	165 0
W. R. & A. Hide	172 15	W. Hammond	137 0
S. Polden	172 15	Chinchen & Co.*	134 14

FINSBURY (Buckingham-street).—Painting exterior and cleaning interior (old portion), and painting interior and exterior (enlargement) :—

J. Watkins	£513	W. Hornett	£381
C. & W. Hunnings	448	Marchant & Hirst	378
McCormick & Sons	420	S. Polden*	350
Stevens Bros.	394		

HARGRAVE PARK (Finsbury).—Painting interior and exterior (old and new portions) :—

Bristow & Eatwell	£705 0	C. & W. Hunnings	£396 10
Dearing & Son	693 0	T. Cruwys	376 0
Marchant & Hirst	669 0	Stevens Bros.	348 0
McCormick & Sons	638 0	Sayer & Son*	473 0

HARVIST-ROAD (Finsbury).—Painting interior and exterior :—

C. & W. Hunnings	£379 10	Stevens Bros.	£333 0
J. Watkins	343 0	Sayer & Son	297 0
Marchant & Hirst	334 0	Bate Bros.*	265 0

ROTHERFIELD-STREET (Finsbury). — Painting interior and exterior :—

Dearing & Son	£666 0 0	Holliday & Greenwood, Ltd.	£547 0 0
Grover & Son	632 0 0	Marchant & Hirst	531 0 0
McCormick & Sons	616 0 0	Willmott & Son	500 0 0
C. & W. Hunnings	600 13 6	Haydon & Sons	438 15 0
		G. Barker	437 0 0
		A. W. Derby*	423 0 0

GREENWICH (Eanersdale-road).—Painting interior and exterior :—

A. J. Sheffield	£367 0 0	W. Hornett	£293 0 0
C. G. Jones	333 13 0	T. H. Jackson	293 0 0
W. Banks	324 12 6	H. Groves	275 0 0
Lathey Bros.	323 0 0	Hayter & Son*	265 0 0
E. Proctor	309 10 0		

‡ROCHELLE-STREET (Hackney).—Painting interior and exterior (infants') :—

Silk & Son	£240 0	G. Wales	£181 10
Shurmur & Sons, Ltd.	193 0	Haydon & Sons	174 0
Barrett & Power	192 0	Corfield & Co.	167 0
J. F. Holliday	191 0	Chessum & Sons	165 0
Willmott & Son	185 0	E. Triggs*	135 0

‡ In this case the interior work will be carried out between March 15 and April 5, 1902, and the exterior work between March 15 and April 12, 1902 —

HACKNEY (†Upton House). — Painting interior (old portion) :—

Grover & Son	£494	Vigor & Co.	£382
Barrett & Power	430	Willmott & Son	382
Chessum & Sons	432	M. Pearson	380
Silk & Son	420	Shurmur & Sons, Ltd.	379
A. J. Sheffield	387	G. Wales*	343

† Six weeks will be allowed for the execution of this work.

KING AND QUEEN-STREET (East Lambeth.—Painting interior :—

Martin, Wells, & Co.	£803 0	Lorden & Son	£488 15
Hudson Bros.	735 0	King & Son	448 0
W. Downs	685 0	E. Triggs	445 0
Maxwell Bros., Ltd.	573 0	Garrett & Son	419 0
W. V. Goad	545 0	Sayer & Son	394 0
Holliday & Greenwood, Ltd.	493 0	G. Kemp	375 0
		J. & M. Patrick*	368 0

MARYLEBONE ("Brecknock"). — Cleaning interior (boys', girls', and infants') :—

Balfour & Co.	£292 10	S. Polden	£250 0
Marchant & Hirst	287 0	Stevens Bros.	245 0
W. Chappell	280 0	Sayer & Son	212 0
Bristow & Eatwell	269 0	F. Chidley*	210 0
C. & W. Huntings.	266 10		

ROLLS-ROAD (Southwark). — Painting interior (old portion) and interior and exterior (enlargement) :—

King & Son	£660	W. J. Howie	£457
Maxwell Bros., Ltd.	567	Rice & Son	449
J. & M. Patrick	566	E. Proctor	424
Johnson & Co.	514	H. J. Williams*	380
Bulled & Co.	459		

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